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# THE OPHTHALMIC RECORD.

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G. C. SAVAGE, M. D., Editor and Publisher.

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A DEPARTMENT OF  
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THE HARMONIOUS SYMMETRICAL ACTION OF THE  
OBLIQUE MUSCLES IN ALL CASES OF  
OBLIQUE ASTIGMATISM.

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*Read before the Nashville Academy of Medicine,  
January 15, 1891.*

---

BY G. C. SAVAGE, M. D.,

*Professor of Ophthalmology and Otology, Medical Departments of University  
of Nashville and Vanderbilt University.*

---

More than four years ago I became convinced, from observation, that a revolution of the eyes, on their antero-posterior axes of rotation, occurs in all cases of oblique astigmatism, for the improvement of vision. This conviction led me to develop a theory of revolution which I made public, for the first time, in a paper entitled "The Function of the Oblique Muscles in Certain Cases of Astigmatism," read before the Section of Ophthalmology of the American Medical Association, at its Chicago meeting in 1887. A year later I wrote a second paper in reply to a paper on "Binocular Astigmatism," read by Dr.

H. Culbertson before the Section of Ophthalmology, at the Cincinnati meeting of the American Medical Association, in which I advocated the same theory of rotation as set forth in my first paper, and by it accounted for all the phenomena referred to in Dr. C's paper, viz., loss of parallelism of the sides of a rectangle, slanting of a level surface, etc.

In developing my theory of rotation I believed the teaching to be true that, under all circumstances, the naturally vertical meridians of the corneæ must be kept parallel or double vision would result. I, therefore, reasoned that, in rotating, both eyes must roll in the same direction. This could be effected only by the superior oblique of one eye acting with the inferior oblique of the other; and this action I termed "Harmonious non-symmetrical."

At that time the condition necessitating this revolving of the eyes was not clear to me. I contented myself by believing that the retinal image was thereby sharpened. That oblique astigmatism involves the necessity of abnormal action on the part of the oblique muscles I will be able to prove in this paper, thus taking the rotation of the eyes on their antero-posterior "axes of rotation" out of the domain of theory and placing it in that of fact.

What is astigmatism? I cannot hope to answer this question more clearly than it is answered in many of the books on the eye. But many of you, not being Ophthalmic Surgeons, possibly have never read the chapter on astigmatism. An astigmatic eye is one whose cornea has not the same radius of curvature for all its parts. That part of the cornea having the shortest radius is the most rapidly curved, while the part with the longest radius is the least rapidly curved. These two parts are always at right angles the one with the other. As a rule the meridian of greatest curvature is in the vertical or nearly so, while the meridian of least curvature is horizontal or nearly. As we go from the meridian of greatest, towards the meridian of least, curvature, we find every meridian less rapidly curved, hence each having a longer radius than the one preceding it.

The law of refraction by curved surfaces I will illustrate by supposing that we have before us two spheres of crown glass, one having a radius of two inches, the other a radius of one inch. Parallel rays of light, on entering either of these spheres, will undergo such a bend at the points of entrance, as will bring them to a focus at the opposite extremity of the diameter of the sphere. The larger sphere, having a diameter of four inches, has, therefore, a focal power of four inches; the smaller sphere, having a diameter of two inches, has a focal power of two inches. The density of the one sphere being the same as the density of the other, the difference in focal power is due solely to the want of similarity in curvature. The more rapidly curved surface has the shorter focus, the least rapidly curved surface, the longer focus.

As already defined Astigmatism is due to a want of similarity of curvature of the different parts of the cornea.

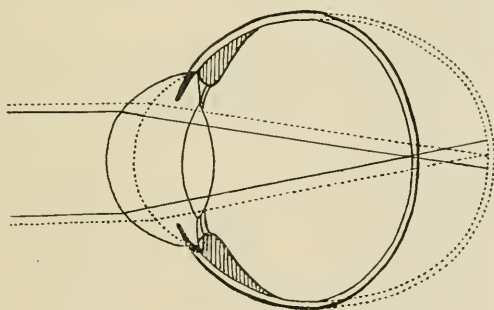


Figure A.

Figure A is intended to represent an astigmatic eye. The continuous and dotted curved lines to the left represent the meridians of greatest and least curvature of the cornea, known in ophthalmology as the two principal meridians. These must be considered as at right angles with each other. The continuous line being the more rapidly curved, we will consider as the vertical meridian of the cornea, and as such is destined to refract the rays of light entering the eye in the vertical plane. The two continuous parallel lines represent this plane of rays,

and these, as shown in the figure, are so bent by this curved surface as to be brought to a focus on the retina, represented by the continuous curved line to the right. The broken curved line to the left, representing the horizontal meridian of the cornea, is less rapidly curved, and, therefore, so refracts the rays of light entering the eye in a horizontal plane (these are represented by the two broken parallel lines) as to give them a longer focal distance. You see them brought to a focus on the dotted curved line to the right, some distance behind the continuous line representing the retina. This difference in focalizing power affects alike both divergent and parallel rays of light.

To have a perfect image of any external object formed on the retina, all the rays emanating from any one point of the object must be brought to one point on the retina. For this to be, the cornea must be a section of a perfect sphere—all the meridians having the same radius of curvature. It is clear then that an unaided astigmatic eye cannot have a well defined image of any object formed on its retina.

I need only mention that, in the two forms of hypermetropic astigmatism, the corneal meridian of greatest curvature is the *best* meridian, the focus for its rays being on the retina, as in simple hypermetropic astigmatism, or a little way behind it, as in compound hypermetropic astigmatism, while the focus for the meridian of least curvature is always more distant.

In myopic astigmatism, whether simple or compound, the meridian of greatest curvature is always the *worst* meridian. In the fifth and last form, mixed astigmatism, the most rapidly curved meridian is the myopic, the least rapidly curved the hypermetropic.

If you were all Ophthalmic Surgeons it would be superfluous for me to add that regular astigmatism, which includes the five kinds just mentioned, is congenital in its origin and its duration is commensurate with the life-time of the individual. While there are opinions to the contrary it is the conviction of the author of this paper that, so long as the astigmatic cornea remains free from pathological changes, the kind and quantity of the astigmatism remains invariable. That is to say, the radii

of curvature of the two principal meridians bear at all times the same relationship to each other.

What effect has astigmatism on the retinal image? Suppose the object looked at to be a line occupying a position at right angles to the meridian of best curvature; its image will be more or less sharp, depending on the quantity of astigmatism, except at its two extremities which will be blurred. If the line correspond to the best meridian, the whole image is marred so that the line is not well seen. If the two principal meridians are respectively vertical and horizontal, the retinal image of any external object is unaffected except in sharpness of outline as indicated above.

In all cases of oblique astigmatism there is something more than a simple blurring of the image. In eyes free from astigmatism, and even in astigmatic eyes when the principal meridians are vertical and horizontal, the object and the retinal image are always in the same plane. In oblique astigmatism, be the obliquity much or little, it is a physical impossibility for the object and its retinal image to occupy the same plane. There is, therefore, not only blurring but also obliquity of the image.

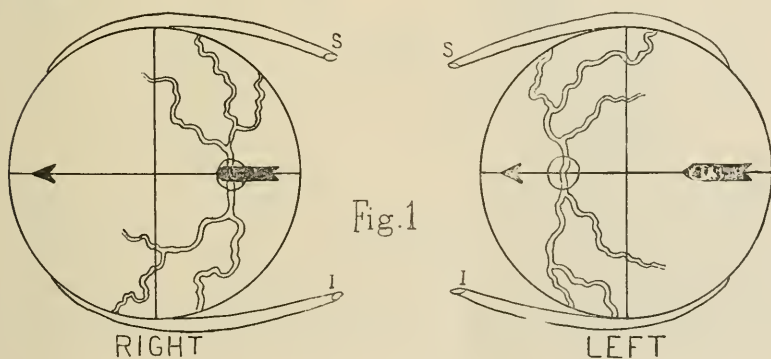


Figure 1 represents a pair of eyes in which the two principal meridians are vertical and horizontal (they can also represent eyes that are non-astigmatic). If, before these eyes an arrow, or the picture of an arrow, be held horizontally the arrow-head



towards the patient's left, it will throw a reversed image on each retina and the two images will be in the same plane with the object. The two images being horizontal fall on parts of the two retinæ that act together, hence but one object is seen.

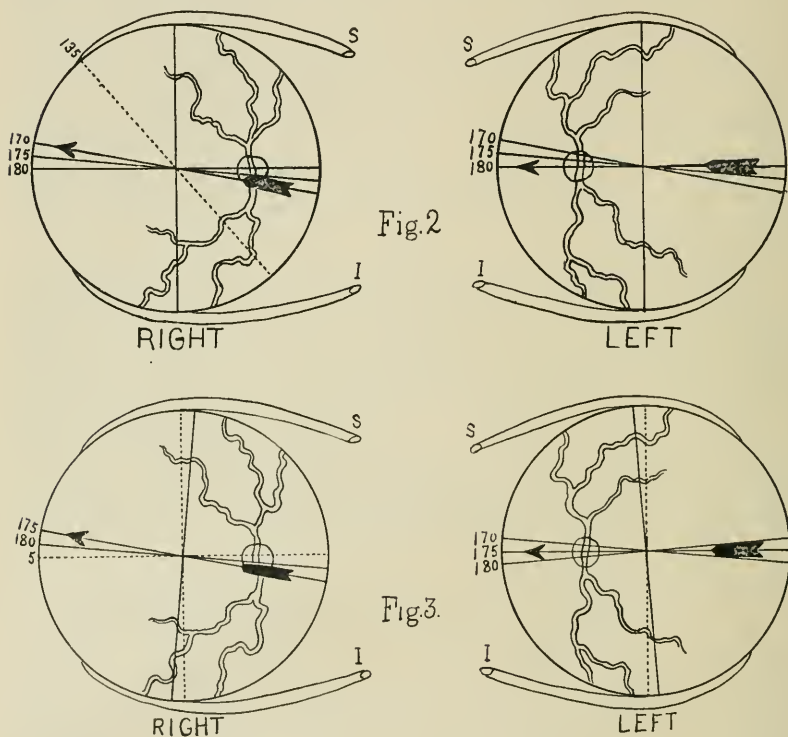


Figure 2 represents a pair of eyes in which there is hypermetropic astigmatism, either simple or compound. The left eye has its best meridian vertical. In this eye, the arrow held as before throws its image on the horizontal meridian of the retina, hence in the same plane with it. In the right eye the best meridian is at  $135^{\circ}$ , as shown by the dotted line. In obedience to the well known law of refraction by curved surfaces, the image of the same arrow must be oblique in this eye, and hence not in the same plane with the object. The obliquity of the image will be greater or less depending on the quantity of the

astigmatism. I represent it as falling on meridian  $170^{\circ}$  of the retina. The horizontal image in the left eye and the oblique image in the right eye, do not fall on parts of the two retinæ that harmonize. The direction of either image in relation to the other cannot be changed except by artificial means—a proper cylindrical lens. This being true, the pair of unaided astigmatic eyes represented by figure 2 must see the arrow double as shown in figure 8, unless something is done by the eyes themselves for the purpose of harmonizing the images. What is done will be shown later.

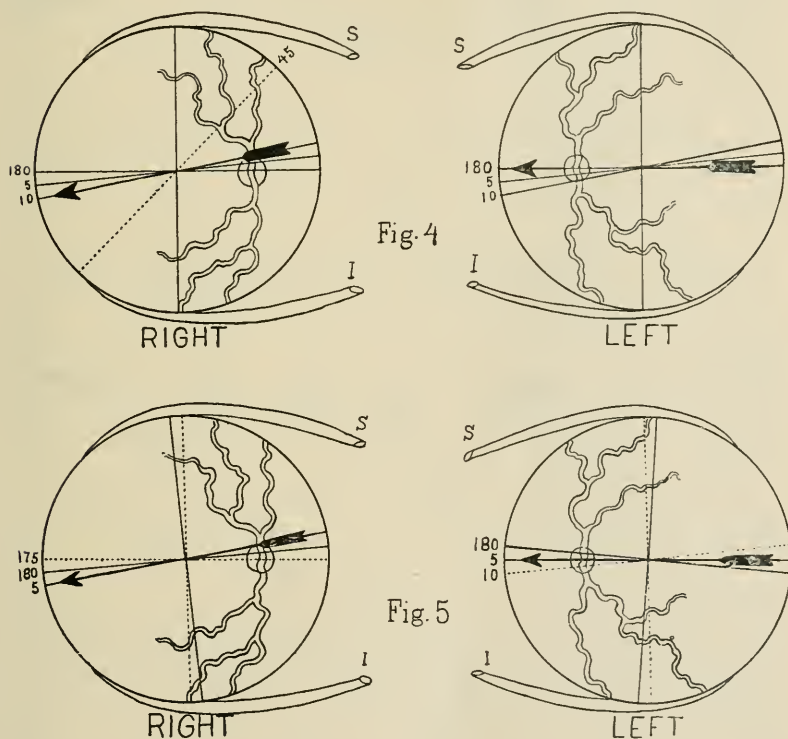


Figure 4 represents a pair of hypermetropic astigmatic eyes, the left one having its best meridian vertical, and the right one having its best meridian at  $45^{\circ}$ . In these eyes there is a left horizontal image (image and arrow in same plane) and a right

oblique image, this time on retinal meridian  $10^{\circ}$ . Nothing but artificial means will change the relative directions of these images; and there must be double vision, unless the oblique image can be made to fall on a portion of the retina that will harmonize with the portion of the other retina, on which the horizontal image may fall.

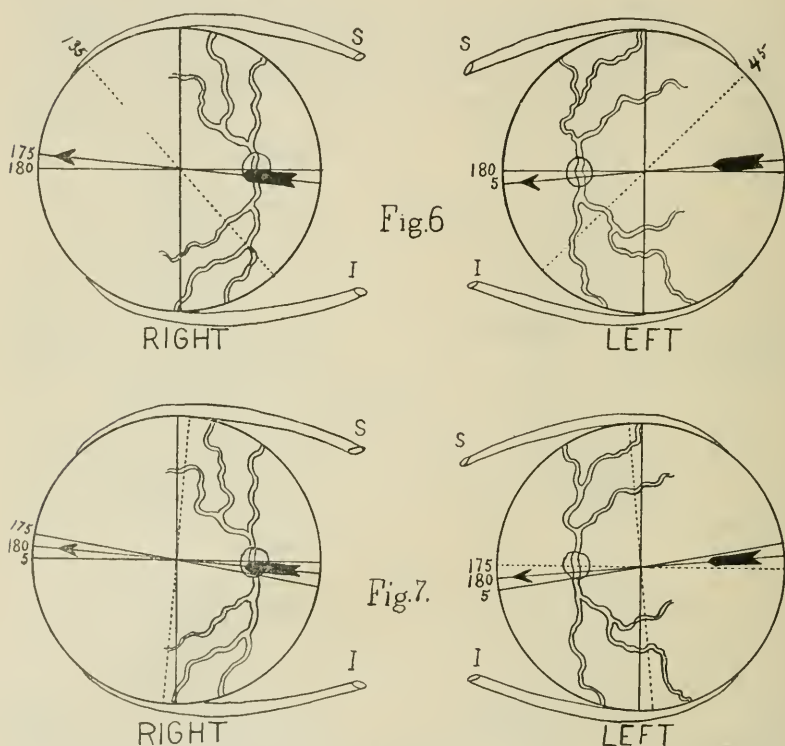


Figure 6 represents a pair of hypermetropic astigmatic eyes, with half the quantity of astigmatism found in the eyes represented by figures 2 and 4, but in both eyes the best meridian is oblique, in the left at  $45^{\circ}$ , in the right at  $135^{\circ}$ . An arrow held in the horizontal position before these eyes will throw an oblique image on each retina, the one in the left eye, on the meridian  $5^{\circ}$ , the one in the right, on meridian  $175^{\circ}$ . Without some change double vision, as shown in figure 8, will be inevitable.



Figure 8.

In the same way I could demonstrate the obliquity of retinal images in oblique myopic astigmatism. The rule in oblique astigmatism, without a single exception, is this:—*the retinal image is displaced towards the meridian of greatest curvature, therefore, in oblique hypermetropic astigmatism the image is displaced towards the meridian of best curvature; in myopic astigmatism, from the meridian of best curvature, and in oblique mixed astigmatism, the image is displaced towards the myopic meridian.*

The obliquity of the image in oblique astigmatism is a matter demonstrable. One can artificially produce any kind of astigmatism. One who is emmetropic, or at least is non-astigmatic, by placing a—3 D cyl. before each eye in trial frames, he creates 3 dioptries of hypermetropic astigmatism. The axis of the left cylinder being at  $90^\circ$  and that of the right at  $135^\circ$ , he has made of his own eyes the kind represented by figure 2. He may now for a moment place the opaque disc in front of his right eye, at the same time placing the double prism (each  $6^\circ$ ) before the left eye. A horizontal arrow, head to left, having been drawn on a card board, he looks through his double prism and sees two horizontal, hence parallel, arrows. On removing the opaque disc from the right side of the trial frame a third arrow appears between the other two but not parallel with them—it is oblique down and to the patient's left. On removing the double prism two arrows are at once readily seen, the one crossing the other, as in figure 8. In a moment the two arrows begin to shut and open like the blades of a pair of scissors, and finally they are merged indefinitely into one.

What efforts are made by the eyes for the correction of astigmatism? In some forms of astigmatism the ciliary muscle labors to improve the state of vision—to sharpen the retinal image. When the rays of light come to the eye parallel, no form of ciliary strain can improve the vision in myopic astigmatism, simple or compound. For divergent rays, in low

degrees of myopic astigmatism, regular ciliary contraction may so act on the lens as to cause the focal interval to fall on the retina, whereby a sharper retinal image is formed.

In hypermetropic astigmatism, the rays of light being either parallel or divergent, regular ciliary contraction can so act on the lens as to make the focal interval fall on the retina, and thus sharpen vision.

In myopic astigmatism, the best meridian being either in the horizontal or the vertical, there can be no strain in distant seeing, for no kind of strain would improve the vision, but there may be ciliary strain in near vision. In hypermetropic astigmatism, non-oblique, there is ciliary strain both for distant and near seeing.

Sectional contraction of the ciliary muscle for the partial or complete correction of astigmatism has its advocates. Martin developed the theory. The ciliary muscle is supposed to act in two opposite sections, while the balance of this circular muscle remains quiet or is in a slighter state of action. The parts in greatest action are supposed to coincide with the corneal meridian of least curvature. It is argued that, in this way, lenticular astigmatism is produced, of the same kind as, but at right angles to, the corneal astigmatism. If this be true, then in non-oblique myopic astigmatism, distant seeing is not attended by sectional ciliary contraction, since it would make vision worse and not better—distant vision in simple myopic astigmatism of 1 D is better than when there is 1 D of simple myopia. The object of all eye-strain is to improve vision and when this cannot be effected the strain is not instituted. In myopic astigmatism near vision would be greatly improved by sectional ciliary strain.

In hypermetropic astigmatism, sectional ciliary contraction could sharpen both distant and near vision. Granting that there may be, now and then, a case of "masked" hypermetropic astigmatism which would point to the correctness of Martin's theory of sectional ciliary contraction, the great mass of evidence gathered from daily observations by whomsoever made goes to prove that there is no truth in his theory.



In all cases of oblique astigmatism, unless the obliquity is in the same direction in the two eyes, and the astigmatism the same in kind and quantity, something must be done in order to prevent double vision, as represented in figure 8. There are but two ways of accounting for the absence of this peculiar kind of double vision, in such forms of astigmatism as that represented in figures 2 and 4. Sectional ciliary contraction would account for it. If it were possible for the ciliary muscle thus to act, one can readily understand how the curvature of the lens could be so changed as to result in lenticular astigmatism equal, but at right-angles, to the corneal astigmatism. If such ciliary action were to take place in the right eye of either figure 2 or 4, the retinal image would not only be made as sharp as if in an emmetropic eye, but it would also be made to lose its obliquity and thus double vision would be prevented. As beautifully as this sectional ciliary action would account for the absence of double vision in cases of oblique astigmatism, it is certainly a false theory, since, when all ciliary power has been suspended by atropine or age, the eyes are still able to do something by means of which the double vision represented by figure 8 is prevented.

If sectional ciliary contraction does not occur, then the two eyes represented by figure 2 or 4 have no inherent power by means of which the relative directions of the two retinal images can be changed, hence there must be double vision, unless the oblique image in the right eye and the horizontal image in the left can be made to occupy corresponding parts of the two retinae. This can be effected alone by the *harmonious symmetrical action of the oblique muscles*.

Figure 3 shows how the eyes represented by figure 2 act in order to have the images fall on corresponding parts of the retinae. The superior oblique muscle of the right eye has so revolved it as to bring meridian  $175^{\circ}$  of the retina in position to receive the impress of the oblique image, while, at the same moment, the superior oblique muscle of the left eye has so revolved it as to bring meridian  $175^{\circ}$  to the horizontal, hence in position to receive the horizontal image. The oblique and

horizontal images being now on harmonizing portions of the retinae there is no double vision.

The double vision that would exist in astigmatic eyes represented in figure 4 is prevented by the harmonious action of the inferior oblique muscles, as shown by figure 5, the inferior oblique of the right eye bringing meridian  $5^{\circ}$  under the oblique image, while the inferior oblique of the left eye causes meridian  $5^{\circ}$  to come under the horizontal image. Thus the two images are made to fall on corresponding parts of the two retinae.

In the oblique astigmatism of the two eyes represented by fig. 6, the two oblique images are made to fall on corresponding parts of the retinae, by the harmonious action of the two superior oblique muscles, as shown in fig. 7.

The obliquity of the image, and the consequent strain on the oblique muscles, fully account for the greater trouble attending oblique astigmatism than is found connected with astigmatism in the vertical or horizontal. As has already been shown in this paper, non-oblique myopic astigmatism is unattended by any sort of strain, in distant vision.

In oblique myopic astigmatism, there is strain on either the two superior or two inferior oblique muscles in both distant and near seeing. In all other forms of oblique astigmatism there is, likewise, strain on the oblique muscles.

In all kinds of non-oblique astigmatism, also in simple hypermetropia, the time comes when all nervous phenomena caused by their existence pass away; their disappearance, being gradual but finally complete, coincides with the failure and final loss of ciliary power, brought about by advancing age. The symptoms caused by oblique astigmatism may be modified by old age putting at rest the ciliary muscles, but they cannot be made to vanish, for the oblique muscles are forced to continue to act in age, as in youth, so as to harmonize the images on the two retinae.

It is easy to account for the little suffering endured by one person with a certain quantity of astigmatism oblique in a certain direction, while another person with the same condition of refraction is a greater sufferer. Let us suppose two persons

having eyes represented by figure 2. The necessity for over-action, or abnormal action, is on the superior oblique muscles. In the case of the one who suffers but little the superior obliques are powerful and can bear the necessary strain without generating a train of nervous phenomena; in the other patient the superior oblique muscles are feeble and the necessary over-work is attended by periodical waves of suffering.

The propriety—I may say the necessity—of correcting non-oblique astigmatism by means of cylindrical lenses is now universally acknowledged. Such a lens sharpens the retinal image, thus making the object clear and distinct, and at the same time removes the necessity for abnormal ciliary strain. In youth, headaches and other symptoms whose existence depends on this strain, vanish as if by magic when the correct cylindrical lenses are worn. Otherwise old age alone would relieve the sufferer without being able to sharpen the image.

In oblique astigmatism the correcting lens both sharpens the retinal image and causes it to lose its obliquity, thus, at one stroke, destroying the necessity for abnormal ciliary strain and for overaction on the part of the oblique muscles. The one set of symptoms whose existence is lost in advancing age, and the other set whose duration is commensurate with the length of life, are made to disappear by the power of the cylindrical lens.

In the several cuts showing the effect of oblique astigmatism on the retinal image of a horizontal arrow, the best meridian is  $45^\circ$  either out or in from the vertical. This position for the meridian of greatest curvature was chosen because, for any given quantity of astigmatism, the obliquity of the retinal image is greatest here. If there are several cases of hypermetropic astigmatism of 3 D each, one of these having its best meridian at  $100^\circ$  (or  $80^\circ$ ) will have a retinal image only slightly oblique, another with its best meridian at  $110^\circ$  (or  $70^\circ$ ) will have more obliquity of its retinal image, and so on until the case is reached in which the best meridian is at  $135^\circ$  (or  $45^\circ$ ), and now the maximum of obliquity of the image is reached. In the remaining cases the best meridians are between  $135^\circ$  (or  $45^\circ$ ) and the horizontal, and the nearer these are to the

horizontal the less oblique are the images. What is true of hypermetropic astigmatism is also true of the myopic and mixed forms of astigmatism. The obliquity of the image varies not only with the difference in position of the meridian of greatest curvature, but also with varying quantities of astigmatism. The image will not be so oblique if there is 1 D of astigmatism, with its best meridian at  $135^{\circ}$  (or  $45^{\circ}$ ), as when there are 2 D, in the same direction. The amount of obliquity of the retinal image of any horizontal object varies, in any given quantity of astigmatism, with the more or less remote position of the meridian of greatest curvature from the vertical or horizontal up to  $45^{\circ}$ ; also with the quantity of astigmatism, the best meridian being at some fixed angle between the vertical and horizontal. In small degrees of astigmatism the obliquity of the image can be but a few minutes, while in the higher degrees the obliquity is  $5^{\circ}$  or more. In some of the figs. used illustrating this paper the obliquity of the image is represented as being as much as  $10^{\circ}$ , only for convenience of illustration.

All errors of refraction should be corrected by the examination of only one eye at a time, an opaque disc being placed in front of the other eye, and the eyes should be under the influence of a mydriatic, unless ciliary strain has been suspended by age; especially should this be the plan of procedure in all cases of oblique astigmatism. It is in cases of oblique astigmatism only that oculists find trouble in locating the axis of the cylinder, at one moment the patient indicating that it should be at a certain angle, and at the next moment  $5^{\circ}$  or more removed from this point. Enough time should be spent and sufficient care exercised to enable the operator to determine the natural location of the best meridian, and at this angle the axis of the cylinder should always be placed. If the best meridian in hypermetropic astigmatism is in the temporal quadrant and there is doubt as to whether the axis of the cylinder should be placed at a certain angle or  $5^{\circ}$  nearer the horizontal the latter should be chosen, for in such a case the superior oblique from long habit wants to continue to revolve the eye in an abnormal, but, without the proper cylinder, necessary, position. The point to be chosen,

in myopic astigmatism, for the location of the axis of the cylinder is always the reverse of that for hypermetropic astigmatism—I mean where there is doubt between any two points.

Each of the two eyes in which there is oblique astigmatism having thus been carefully corrected the proper glasses are ordered. When the patient begins to wear them his binocular single vision is nearly always disturbed by an apparently changed condition of objects, a rectangle no longer appearing to be such, and a level surface seems to incline. Some times the changes are so marked as to make the patient very uncomfortable. This metamorphopsia (so termed by Dr. Lippincott, of Pittsburg,) may continue a few hours, a day, a week or a month, but in the end is certain to disappear. It is due to a continuation of the old habit of rotation, when both eyes are used, and a consequent loss of coincidence of the best meridians and the axes of the cylinders. Whenever this now unnecessary habit of rotation is broken, be it soon or late, sudden or gradual, the metamorphopsia ceases. The different forms of metamorphopsia can be demonstrated artificially.

Four years ago I said that in cases of oblique astigmatism the eyes were made to rotate by means of the oblique muscles; I repeat the assertion to-day with emphasis, but with this modification: I then thought the rotation was effected by the *harmonious non-symmetrical* action of the abliques, but in this paper I have demonstrated that the rotation is brought about by the *harmonious symmetrical* action of the obliques and, too, have shown why the rotation is necessary.

The only papers ever published, touching this question, so far as I know, except my own already referred to, are: one on "Binocular Astigmatism" by Dr. H. Culbertson, in the Journal of the Association, Nov. 3, 1888; and one on "Metamorphopsia" by Dr. J. A. Lippincott, in the Archives of Ophthalmology, March, 1889. The latter is a valuable paper and shows the Doctor to be a close observer as well as a ready writer. In his paper he incidentally refers to the obliquity of the retinal image in oblique astigmatism but does not advocate the doctrine of rotation.



## SOME OF DR. C. R. AGNEW'S ENUCLEATIONS,

BY DAVID WEBSTER, M. D.,

NEW YORK.

Written for the Ophthalmic Record.

CASE 1. Enucleation of a shrunken eyeball for sympathetic irritation of the fellow eye.

Aug. 27, 1874. Frank W., aet. 25, a resident of New Jersey, lost the sight of his left eye from injury by a torpedo explosion when he was one and a half years old. Since he was ten years old he has worn an artificial eye over the atrophied globe. The stump is reddened, swollen, and very sensitive and tender on pressure, but not painful. For the last year or two the sight of his right eye seems to have failed. He cannot read much, especially nights. After reading a short time the printed lines appear double. Vision.  $=\frac{20}{40}$  Manifest hypermetropia  $\frac{1}{13}$ , but vision is not improved by glasses.

Aug. 29. Under atropine,  $V=\frac{20}{20}$ — with  $+\frac{1}{8}$  s.  $\odot +\frac{1}{24}$  c. ax  $180^\circ$ .

There is hyperæmia of the optic disk and some photophobia. The chemosis of the stump has increased.

Aug. 29. Enucleation of the atrophied eyeball by Dr. C. R. Agnew.

Aug. 30. The photophobia has entirely disappeared.

The patient was fitted with spectacles to be worn all the time, thus correcting his compound hypermetropic astigmatism and relieving the ciliary strain and, at the same time, concealing, to a certain extent, the fact of his wearing an artificial eye.

CASE 2. Enucleation of an eyeball which had contained a piece of gun cap for five years.

July 18, 1874. G. W. H., aet. 15, resident of New Jersey, comes to our office with *iridochoroiditis* and *large hypopyon* of his left eye, the vision of which is only perception of light.

Five years ago, when he was ten years old, while snapping a cap on a stone, a piece of it flew up and struck his left eye.



He thinks he lost the sight at once, but is uncertain whether the piece of gun cap penetrated the eyeball or not. The eye got red and was very painful for four or five days. He has, since that time, had three attacks of inflammation in the injured eye, very painful and lasting three months at a time.

A solution of sulphate of atropia, four grains to the ounce, dilates the pupil very slightly. There is a plaque of lymph behind the lower margin of the pupil. The upper half of the pupil is black. There is no reflex from the fundus with the ophthalmoscope.

Right eye, vision =  $\frac{20}{20}$  + with difficulty. Vision is not improved with glasses.

July 28. The inflamed eyeball was enucleated by Dr. C. R. Agnew, and cut open on the spot.

The foreign body, a piece of gun cap about *one line* in length and *half a line* in breadth, was embedded partly in the iris and partly in the shrunken, cataractous lens, and surrounded by a mass of lymph. The vitreous humor was diffuent, otherwise there was no gross disease of the parts of the eye posterior to the crystalline lens.

Nov. 31. The patient returns to say that he has had no trouble with his eye since the operation.

Vision =  $\frac{20}{20}$ ; emmetropic.

CASE 3 Enucleation for sympathetic irritation from bony plate in choroid

June 8, 1874. Charles N., aet. 59, married, of temperate habits and in good general health. His left eye was injured by a stab of a knife when he was two years of age. The eye was sightless and atrophied but gave him no trouble till two years ago. He then began to have attacks of supra-orbital neuralgia. These attacks have increased in frequency, and recently have lasted three or four days at a time. The eyeball is now red, the small cornea is totally opaque, the globe is shrunken and hard to the touch, and probably contains a bony or calcareous plate.

R. V. =  $\frac{20}{20}$  —; emmetropic.

He has had one or two attacks of inflammation of the right eye, the optic papilla of which has a congested appearance.

June 9. Ether was administered by myself and the atrophied eyeball enucleated by Dr. Agnew, who cut it open, on the spot, and found therein a boney plate as was suspected.

June 16. The patient returned to his occupation, that of a bank cashier, wearing an artificial eye. He was seen more than ten years after, and had had no further trouble with his remaining eye.

CASE 4. Enucleation for obstinate Kerato-Iritis in a useless eye.

Oct. 26, 1874. Mrs. W. H. L., aet. 31, came to Dr. Agnew with a long standing Kerato-Iritis with obstinate pain. The vision of the eye had long since been reduced to perception of light and as the history of the case seemed to show that the eye was incurable, he enucleated it on the same day.

Dec. 14, 1875. The patient returned, complaining of impaired vision of the other eye.

V. =  $\frac{20}{20}$  with --  $\frac{1}{48}$ c. axis  $80^\circ$ . Ordered +  $\frac{1}{48}$ c. axis  $170^\circ$  for reading.

Nov. 14, 1876. Mrs. L. returns again complaining of pain in the corner of her eye.

She was ordered  $-\frac{1}{48}$ c. axis  $80^\circ$  to wear all the time when not using the other glasses for near work, and has not reported since. The inference is that the pain was due to ciliary strain, and was relieved by the constant use of glasses.

CASE 5. Enucleation for Scleral Staphyloma, with sympathetic Kerato-Iritis of fellow eye.

April 6, 1874. Louise W., aet.  $4\frac{1}{2}$  years, had eczema in infancy, appearing a week after birth. Shows hollow nose, eroded skin at angles of mouth and on upper lip, teeth not notched. The sight of the left eye was lost at the age of eight months, from syphilitic irido-choroiditis. The mother thinks the child had something like cataract in the left eye from birth. She now has Kerato-Iritis of the right eye. Ordered atrop. sulph. gr. 1

sol. to be dropped into the eye *ter in die*, strict diet, and, internally, a tonic of ferro-phosphated elixir of calisaya with strychnia.

Dr. Agnew, after treating the child without apparent benefit, for several months, sent her to Dr. Knapp, requesting his opinion as to the propriety of enucleating the staphylomatous eyeball.

The following is Dr. Knapp's reply: "I cannot but concur with you to remove the left eye of Mr. W's. child. I looked up the notes of the child, whom I once saw in consultation with the family physician. It is stated that the child had iritis syphilitica. The pupil was closed and filled with a yellowish white plug. The child had an eruption on its face. On enquiring, Mr. W. furnishes no positive history of syphilis"

Among other evidences of congenital syphilis, the child had periostitis of the tibia.

Nov. 2, 1874. The left eye was enucleated by Dr. Agnew. During the excision it was ruptured and ruined for microscopic examination.

Nov. 8. The enucleated eye healed kindly and the fellow eye seems to be improving.

March 18, 1875. The patient has another attack of Kerato-iritis and has been using mercurial inunction the last ten days. The mouth is slightly affected. The mercury was now stopped and the patient put upon small doses of iodide of potassium. She recovered slowly from this attack, and we have no further history of her case.

CASE 6. Enucleation of Eyeball and scalping of upper lid, for small spindle celled sarcoma of lower lid, exposing the eyeball.

May 17, 1874. Captain R. V. B., aet. 42, comes with a letter of introduction from a physician saying:—"Capt. B. visits New York for the purpose of consulting you with regard to a lupus of his eyelid of many years' standing."

The lupus has destroyed the whole of the lower lid, leaving the lower half of the eyeball bare.

The patient gives the following history:

He had a sty on his left lower eyelid, about its middle, when eighteen years old. When the sty got well a red spot was left, and the eyelashes fell out of a space about as large as a pea. The eye was then well until 1863, a period of thirteen years, when, being much in the war, in the cavalry as commissary, another large and very painful sty came in the same spot. It kept him awake with pain for two nights. He opened it with a needle and squeezed it a good deal. It then got well but came on again in the course of a week. He opened and squeezed it again and it went away. But it left a still larger scar that had an itching sensation about it, especially when he came in out of the wind. It troubled him in no other way until the fall of 1864, when it began to assume the character of an ulcer. The inflammation extended to the eyeball, and he had to leave the army and go to Richmond in care of the Doctor in March 1865. Dr. G., made an incision and squeezed out pus. He put him upon corrosive sublimate, and in four weeks he thought he was cured. In Dec. 1865 it came on again, but was improved by rest. In the spring of 1867 he began to write, and in the fall of 1868 he had to stop writing as it evidently made his eye worse. The next three years it gradually got worse. It has recently been getting worse very rapidly. He was last under treatment of Dr. Parrish.

Oct. 29, 1874. Nine days ago the eye became inflamed and painful after over-use in writing. There is much swelling of the exposed portion of the globe.

Dr. Agnew now advised enucleation and sent him to Dr. W. H. Draper for his opinion.

The following is an extract from Dr. Draper's letter in reply:

"Oct. 30, 1874. I should think your judgment correct in regard to the propriety of removing Capt. B's. eye. I see no other way of successfully reaching the depths of the rodent ulcer which appears already to have reached the superior rectus. The use of escharotics, in the present condition, is out of the question, as the last experience demonstrates. It appears to me that when you enucleate the eye, you may, perhaps, find that you will be able to excise a considerable portion of the ulcer.

If you use an escharotic I should recommend the Vienna paste, though I believe excision is to be preferred if practicable."

Nov. 2, 1874. Ether was administered by myself. Dr. Agnew first scalped the upper eyelid and then enucleated the eyeball in the usual way. He left the ulcerated surfaces to be treated after recovery from the operation.

The patient suffered from headache, and the tissues in and about his orbit were much swollen, for several days, but finally a free discharge set in, the swelling went down, and the patient returned to Parrish for further treatment.

The enucleated eyeball was examined by Dr. William Cheatnam in Dr. C. Weitzman's Laboratory, and reported, "conjunctivitis; eyeball otherwise normal."

Under date of Sept. 26, 1877, Dr. Parrish, writes:—

"Capt. R. V. B., requests that I shall give you a brief history of his case since you last saw him. Following his return home after his last visit to you two years and a half ago I began to use a saturated solution of chromic acid as a local application, and at one time, obtained complete cicatrization of the ulcerated surface. In a few months the cicatrix broke down and I have never been able to procure its closure again.

"This, I believe, has been in part due to the very irregular manner in which the treatment has been conducted; the patient having elected himself "consulting surgeon" to the case and with the result of developing the usual professional difference with regard to the management of the disease. I must say, though, that he has been more docile, of late, and, possibly, in consequence thereof there has been a decided improvement in the condition of the parts. The occasional and irregular application of the chromic acid has been the only treatment employed until very recently. For a few days past, he has been using as a permanent dressing equal parts of glycerine and liquor ferri persulphatis, painted over the ulcerated surface night and morning, and covered with cotton wool. As a matter of justice to myself I beg leave to state that the case has never been in my hands except in a partial and provisional way; and that my



professional duty has been much more of an advisory than of an executive character."

The patient came to New York again, and we saw him on Oct. 7, 1879. The whole orbit was then excavated by the ulceration, which had extended far down on the cheek and up on the brow and involved the upper half of the nose.

A letter from Dr. P. was received, dated Oct. 9, 1879, in which he said: "At the request of our mutual patient, Capt. R. V. B., I beg leave to present a brief summary of the treatment of the case since you last saw him. It has consisted of a rather irregular application of a more than saturated solution of chromic acid to the ulcerated surface, combined with the use of iodoform as a continuous dressing of the sore. In spite of these means the ulceration, particularly in the last half year has extended considerably in every direction, and the suffering of the patient from implication of the supra-orbital nerve in the morbid process has been very great and almost continuous despite the free use of chloral and morphia. I do not think I can claim more for the treatment than some retardation of the natural rate of progress of the disease. Shortly before his departure for your city I proposed to him a trial of the Arsenical paste Caustic after the method of Marston, and, upon his leaving, requested him to obtain your opinion upon the advisability of this procedure."

Dr. Agnew sent Capt. B. to Dr. E. A. Maxwell, of New York, who is skilled in the microscopical examination of pathological specimens. The following is Dr. Maxwell's report:

"Oct. 8, 1879. Capt. B. came in this morning, bearing your request to remove a portion of his orbital growth and examine it microscopically. Accordingly, I removed a small portion from the inner surface of the ulcerated cavity, opposite the situation of the outer canthus. I examined several teased out slides, with almost entirely uniform results. The growth at the spot examined is composed of small and medium spindle cells, with a large nucleus and nucleolus. These spindle cells are closely packed, show no basis substance, and toward the ulcerated sur-



face of the growth, closely packed, small and medium, nucleated, round cells are met with (granulation tissue?).

"One slide examined showed, in addition to the above, a few cell nests of epithelioid character. These cell nests were in the form of concentric lamellae. They were found only on one slide, but whether this mixed type of growth might not exist at the borders of the skin I am in some doubt. Throwing out of consideration the latter doubt, the growth would be classed a *spindle celled sarcoma* of the small and medium celled variety. With the epithelioid cell nests included it would be classed as a *sarcoma carcinomatodes*. I should call it a small spindle celled sarcoma reserving the doubtful character. Its malignancy I should not question, and its course has probably not much longer to run."

266 MADISON AVENUE.

## OSSIFICATION OF CHOROID.

BY

T. HILLIARD WOOD, M. D., NASHVILLE, TENN.

Written for the Ophthalmic Record.

The formation of true bone within the human eye is of sufficient rarity to render the report of well marked cases desirable. In the "Archives of Ophthalmology," Vol. xix, No. 4, will be found the report, by the writer, of a case in which most of the inner layer of the choroid had become ossified.

The following report is of a case similar to the one above referred to:

Miss T. S., aet. 27 years. Suffered when five years old with an inflammation in left eye which resulted at the time in loss of vision. The exact seat and character of the original inflammation, together with the succeeding changes in the eye, could not be definitely ascertained. The eye has for years been the seat of recurring attacks of neuralgic pains. The right eye remained normal, except during the attacks of pain in left eye, at which time it showed sympathetic irritation. Because of the pain, and menace to the good eye it was decided to enucleate the blind one.

Accordingly on Sept. 17, 1890, the enucleation was performed. On examination after enucleation, the globe was found of normal size. The sclerotic also seemed normal, but the cornea was largely replaced by cicatricial tissue.

The outer layer of choroid was thin, of dark brown color, and was connected with sclerotic at optic nerve entrance, the points of emergence of the Venae Vorticosae and anterior margin of osseous shell.

The inner layer of choroid was replaced by a shell of bone. This shell was pierced behind by an opening for the optic nerve, the opening not being more than two-thirds the size of an adult optic nerve, but corresponding likely to the size of the optic nerve in infancy when the ossification doubtless first began.

The shell extended forwards from the posterior pole to about the equator. At the anterior termination the shell was serrated and seemed as if composed of two layers of which the inner extended two mm. in advance of the other. To this serrated edge the fairly well preserved ciliary processes were firmly attached. The outer surface of the shell was covered by the outer layer of the choroid, but no adhesions existed except at the anterior margin of the shell. On the inner surface of the shell was a funnel shaped depression with the optic nerve entrance as its apex. This funnel was two mm. in depth and three mm. in breadth. The shell generally was one mm. in thickness.

The iris remained as a brownish curtain with patches of dark pigment here and there. The pupil in dissection was found circular and seemingly never adherent to the lens. The attachment of the iris to the sclerotic was much more firm than its attachment to the choroid, for while in dissection the later attachment would tear readily, the former held firm.

The retina remained as a reddish membrane and contained several gray, seemingly cicatricial spots one mm. in diameter.

The retina was detached everywhere except at optic nerve entrance and anterior termination of the bony shell, thus having the shape of a funnel with base forward and apex corresponding to the papilla. At the papilla was a star-like cicatricial spot two mm. in diameter. Distinct blood-vessels were not seen in the retina.

The lens was found in its proper location, but lying loose. It was calcareous throughout. In size it was slightly, if at all, diminished, but was altered as to shape, in the latter respect resembling the crown of an incisor tooth. The humors of the eye were represented by a reddish-brown watery fluid.

Since the enucleation all neuralgic attacks, with all evidence of sympathetic irritation have subsided.

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To attempt to add another medical journal to the already long list now in existence would, at the first glance, seem unnecessary. The editor and publisher of *The Ophthalmic Record* has contemplated, for a long while, entering the field of journalism; he has counted the cost, both in labor and in dollars, of presenting to the medical profession a journal that would be useful to the reader and creditable to the editor, and has deliberately undertaken the work. No chorus of voices imaginary or real, has called him to the editorial chair; and if failure should shroud his efforts he could have no one to blame but himself, while, on the other hand, if success should crown his labors no one can say "I caused him to venture in journalism."

The scope of the *Record* is not fully indicated by its name. Besides recording new truths in ophthalmology, and presenting old truths in a new light so as to make them more useful, some of its pages, in every issue, will be devoted to Otology, Laryngology and Rhinology. Dr. Geo. H. Price has editorial charge of this department. Besides his own writings, and gleanings from current medical literature, he will have regular contributions from men of ability and well earned reputations.

The greater part of the *Record* will be devoted to Ophthalmology. These pages will be filled with original, editorial and selected matter. For the original department many ophthalmic

surgeons, seen by the editor in a recent trip East, have promised contributions. These promises begin to have their fulfillment in this number of the Record. While but few of the southern, western and north-western Oculists have been seen, it can be confidently stated that these hard workers and original thinkers will aid the Editor of the Record in making it one of the most useful journals published.

No effort has been made to form a long list of collaborators, in that way to give doubtful promise of effulgence from every page of every issue. Only those who actually contribute will have their names appear as persons interested in the labor of furnishing food for thought to the readers of *The Ophthalmic Record*. Contributions from reputable ophthalmic surgeons in this and other countries will always be thankfully received, and correct publication of same will be made as early as possible.

Free but judicious use will be made of matter published in other journals, but credit for same will always be given both to the author and to the journal. The Record does not desire to lessen the prosperity of any existing journal, but would increase it if it could. It only asks a fair chance for doing its own work in its own way.

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As will be seen this number of the *Ophthalmic Record* is sent out two and a half months before the date for its publication, not having been preceded by a prospectus announcing its contemplated birth. Every physician, whether engaged in special or general practice, receiving a copy is asked to become a subscriber. A subscription blank and an addressed envelope can be found fronting the first page of this issue.

The subscription price has been made two dollars a year, payable in advance. The editor will labor to make every one of the twelve issues worth the cost of the whole volume to every subscriber.

Every number of the Record will contain 32 pages of reading matter, which, in twelve months, will make a volume of 384 pages. The mechanical make-up of the journal will be the best.

## THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Much has been written for and against the removal of the Journal from Chicago to Washington. That the great majority of the members of the Association are against the proposition is evident, and it is almost certain, since the Trustees of the Journal have referred the question to the next meeting of the Association for final settlement, that the change will not be made. No good reason for the proposed change has been offered by any one of its advocates, and yet they have done their best, having exercised all their wisdom and zeal. If they can only read "the hand-writing on the wall," they will not be so foolish as to waste their eloquence in advocacy of the proposed change, in the meeting to be held in Washington.

That there should be a Board of Trustees to manage the Journal is correct, but this Board should not be all-powerful. The Association, at the very earliest opportunity, should take from the Trustees the power to make radical changes like the proposed removal.

The Journal is not perfect—what Journal is? Its editor should have nothing to do but labor for its improvement, and for this labor he should be well paid. He should be capable, willing and bold. He should have a strong corps of co-editors, one representing every section of the Association. Such a force engaged in editing the Journal could soon make it one of the best in the world.

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## GRANULATED LIDS.

In the next issue of the Record the treatment of granulated lids, Trachoma, will be a leading feature. Possibly one paper will be devoted to its pathology. There is nothing in ophthalmic practice so annoying and unsatisfactory as the management of this disease in its various stages. Short papers from eminent ophthalmic surgeons will be presented.



DEPARTMENT OF OTOTOLOGY, LARYNGOLOGY  
AND RHINOLOGY.

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GEO. H. PRICE, M. D., EDITOR, 621½ Church Street,  
NASHVILLE, TENN.

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In assuming editorial charge of this department, I do so fully realizing the responsibility which I have undertaken, and feeling that the arduous duties imposed upon me must be in a measure or rather largely relieved by those who have kindly consented to help me in this matter.

This department comprises those branches in which the most rapid strides have been made in recent years, and in which there is yet much to be accomplished. The field is a broad one and there are no few who have made valuable additions, to which the profession owes much, and to whom we are looking for more light upon these branches.

It will be my aim to furnish our readers with material which will prove of interest and advantage, not only to the specialist but also to those who engage in the broad field of general practice. The importance of special attention to the subjects which shall, from time to time, be discussed in this department, has been growing with the general practitioner, as well as with the specialist, and the time is at hand when all should be familiar with the general methods of diagnosis and treatment, even though they are wanting in time or opportunity to branch out in this direction. This being the case it will be the object of this Journal to place in the hands and at the disposal of all interested such facts and principles as will enable all physicians to fully understand those special features which so frequently complicate ordinary conditions. In order to accomplish this end, papers from eminent investigators and instructors, with reports

of cases and practical suggestions will be placed in the hands of our readers. Believing that an interchange and expression of opinions will materially benefit both the contributor and the reader, we ask the hearty co-operation of a generous profession to this end.

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LOCAL USE OF MENTHOL AND ENCATYPTOL IN AFFECTIONS  
OF THE MIDDLE EAR.

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Dr. Adolph Bronner, gives some interesting facts concerning the use of these remedies in certain diseases of the ear. "The most favorable cases seem to be those of chronic swelling of the mucosa, whilst in the initial stages of some cases of sclerosis I was inclined to think that I had prevented the encroachments of the disease. When the mucosa is greatly swollen, I direct the use of a snuff of boric acid with two per cent of menthol to be frequently used in small quantities, while at the same time I inflate the middle ear with the catheter and menthol vapor. A few drops of a twenty per cent solution of menthol in olive oil is poured into an antiseptic capsule, and this is then firmly attached to the catheter." The capsule used is similar to the Hartman capsule, and the current is passed through by use of Lucae's modification of the Politzer bag. The vapor is slowly inflated, and much stress is put on the *prolonged use* of this agent upon the diseased mucosa. "I do not remember having produced any pain or inflammation from this procedure, and on the contrary I think that by the use of the menthol I have been able to relieve the slight occasional pain."—*Archives of Otology*.

BY ROBERT CUNNINGHAM MYLES, M. D.

Lecturer on diseases of Nose and Throat, and demonstrator of practical and artistic anatomy of the nose and throat associated with the ear.  
New York Polyclinic.

Surgeon to nose, throat and ear department of Transfiguration Clinic,  
Assistant Surgeon to nose, throat and ear department of  
New Amsterdam Eye and Ear Hospital.

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Written for the Ophthalmic Record.

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### CATARRH,

A hope dispelling word to laymen, a prognostic sea without a chart or anchor for the average general practitioner, viewing it from their standpoint. The former mostly dread the offensive odor, the latter the uncertainty of benefit from remedies applied. The persistent Rhinologists have done much during the last decade, to quiet the fears on the one hand, and to furnish rather a reliable compass for the uncertain sea on the other. The pathological history and diagnostic features concern us most. The causal factor of the majority of catarrhal symptoms finds its origin in the application of force, against the front and tip of nose. This (as when tracing the origin of many things) may go back, till lost in the twilight of fables: probably to the rotatory movements in the ischiatic plains, or when using the pubco-umbilical tissue as a foot spring board, found a maternal vertebra not a safe application for an embryonic nasal septum. In a rather extensive observation of nasal septa, in dead house and clinical room, I have found but few approaching the normal position—and many, where they do not impinge upon the respiratory lumen or press upon or into the opposite parts—seem to induce no pathological effects. Deflected septa with thickening of convex surface, enchondroma and exostoses,

where the subjective symptoms point to the pathological conditions, should be treated in a positive and surgical manner usually with saw or trephine, after puberty. There should be no dreaded anticipation of the occurrence of an unpleasant odor.

Next in frequency as to the origin of catarrh, are the allied conditions of dilatation and hypertrophy of the vessels and tissue in and beneath the mucous membrane of the nasal fossae. These conditions in a physiological and mechanical way interfere with the normal functions of the nose, producing catarrh with many varied manifestations. These states can be differentiated and can be treated successfully with chromic, nitric and trichloroacetic acids, occasionally using the electric cautery and the snare.

There are three other conditions that are more serious and tax the resources of the therapeutic art, first, atrophic rhinitis, second, mixed atrophic rhinitis, third, chronic pathological processes of accessory sinuses manifested by constant discharge of mucus or mucopurulent matter from the openings of respective cells. For a long time I have observed that the greater proportion of cases of atrophic rhinitis commenced between the ages of three and eight, and always with a suppurative inflammation, and my experience coincides with that of Dr. Browth ;—constant clearing with disinfectants followed, by local stimulants and Faradic current will relieve the patient of the unpleasant odor. Whenever there is any necrosed bone present, it should be removed at once, with curette or cutting forceps. The vaseline products combined with disinfectants and antiseptics, give most excellent results by preventing formation of crusts, the fruitful source of odor, irritation and stenosis. I prefer the solid white vaseline combined with carbolic acid from three to ten grains to the 5i alternating with liq. alboline combined with menthol or iodine, to be used two or three times a day with a Codman & Shurtliff, De Vilbiss or Leach & Greene Vaseline spray producer.

The nose should be irrigated at least once a day, with a solution of common salt, thirty to fifty-six grains to the pint, adding a limited amount of listerine or carbolic acid as condition may indicate.—23 WEST 36TH ST.

# THE OPHTHALMIC RECORD.

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## PATHOLOGY AND ETIOLOGY OF TRACHOMA.

Written for the Ophthalmic Record by

JOHN F. FULTON, M. D., P. H. D.,

Professor of Ophthalmology, Otology and Hygiene in the  
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It is often claimed that specialists become narrow and do not keep abreast in knowledge with the general profession in general pathology and physiology; but this claim cannot be justly made in regard to the representatives of Ophthalmology, for the most brilliant discoveries\* that have been made in this branch of medicine and surgery have been in consequence of the advance which has been made in pathological studies. This cannot be better demonstrated than by glancing at the history of the progress made in the treatment of trachoma.

Before the pathology of this most troublesome of all diseases was known, the treatment was tedious, unsatisfactory and unscientific. But the discovery of the pathology of the disease has suggested the scientific remedy, which has resulted in cutting short the disease, in curing it in a very short time in many cases, which formerly required many months and sometimes years.

No more interesting study can be presented to the student of medicine than the study of the pathology of trachoma. This

should not be mistaken for those small semi-transparent bodies seen in the normal conjunctiva, especially within upper and lower retro-tarsal folds, at the outer side, which are supposed to be lymph glands and known as the follicles of Krause. It should not be confounded, however, in any way with granulations of healing wounds, as there is no resemblance in the production of the two processes.

Briefly stated, in trachoma we have papillary outgrowths of great irregularity, rapid proliferation and degeneration of the epithelial elements of the conjunctiva, vast accumulation of lymphoid cells in granular masses and variously diffused infiltrations, pathological development of connective tissue and multiplication of bloodvessels, with more or less serous effusion. The typical feature in this morbid production is the formation of follicles. The follicles contain but very few blood-vessels, but are surrounded by a vascular net-work. The epithelium and papillæ become swollen. The papillæ becoming crowded together, in a mechanical way, produce ulceration thus presenting rather deep pockets, in which are found dead epithelial cells.

In 1881-82 Sattler of Prague described a micro-organism, which he claimed was the cause of trachoma. The investigation of Sattler was elaborated by Michel, who clearly demonstrated the relationship of cause to effect of the diplo-coccus to trachoma of the conjunctiva. The diplo-coccus is much smaller than the gono-coccus, and in shape and position greatly resembles the staphylococcus-pyogenes, being, however, slightly larger, and does not have the same disposition to mobility. The trachoma-coccus is usually arranged in chains. According to Schmidt it is easy to produce trachoma from the cultures of the coccus in birds. In mammals it is more difficult to accomplish. The trachoma-coccus is found in all parts of the conjunctiva, and in advanced cases in the sub-conjunctival tissue. They are also found in the secretions of the trachomatous eye.

Stadrini noticed that the diplo-coccus would much more readily produce trachoma when placed under the conjunctiva of poorly nourished animals, than if so placed under the conjunctiva of animals which were well fed. The same author found



the specific coccus in groups of three to nine, and more in the protoplasm of the lymphoid cells of trachoma, but never really in the fibrous tissue or in the connective tissue of the conjunctiva. Follicular conjunctivitis and trachoma, pathologically speaking, are the same disease. They differ simply in intensity, follicular conjunctivitis being simply a mild form of trachoma. The diplo-coccus is found in both, and the pathological products of both diseases are identical. The trachoma follicle resembles in many particulars the formation of tubercles, the one being the result of the diplo-coccus, the other of the tubercular bacilli. "At least both seem to have this in common, that when they disappear the tissue in which they are embedded is destroyed, and a cicatrix is the result."

It having been proven that this is a specific disease, or rather a disease due to a specific cause, which is a micro-organism, it is interesting for us to trace the different pathological steps which take place in the conjunctiva, and tissue lying under the conjunctiva, from the time of the entrance of this micro-organism to the close of the disease.

"We must imagine that the micro-organism, either at a wounded spot of the epithelium, or perhaps even through the uninjured epithelium, penetrates directly into the cytogenic tissue, and here produces a hyperplastic enlargement of the lymph-follicles, eventually leading to new formation of follicles. The best conception of the manner of operation of the trachoma-coccus is gained by comparing it with the behavior of the conjunctiva when infected with the Neisser gono-coccus, which morphologically bears such uncommon resemblance to the trachoma-coccus."

In the earliest stages we notice simply an irritation, resulting in an exaggeration of the normal condition of the parts. This is followed by a hyperæmia of the bloodvessels and lymphatics. This is speedily followed by the formation of pathological tissue, which constitutes the chief characteristic of the disease, namely, the production of heaps of lymphoid cells. The lymphoid tissue usually forms more or less diffusely in the layers of the conjunctiva, immediately under the epithelium, becoming less and less

dense in the deeper layers, until finally we arrive at isolated individual lymph cells, associated occasionally with leucocytes and more or less serous effusion. Isolated lymph cells will also be found between the accumulation of the lymphoid bodies, known as granulations. An enormous quantity of lymphoid tissue is most frequently found in the retro-tarsal folds, rising up in large ridges, occasionally forming large isolated wart-like protuberances. Sometimes the granulations cover the white mucous membrane of the conjunctiva like sharp, pointed red papules, presenting a velvety appearance; sometimes they look like red flattened warts, and sometimes present themselves in long ridges, like a cock's comb. If a transverse section is made through one of these abnormal growths, it will be found to consist of heaped together lymphoid cells, in which follicles in imperfect stages of development will frequently be found. These lymphoid bodies have a frame-work consisting of finely reticulated connective tissue. Usually a limiting capsule more or less perfectly formed, can also be made out. According to Reid, the follicles are not surrounded by any definite capsules, and do not increase in size by development from within outwards, but by the incorporation of surrounding lymphoid cells. Together with the formation of this characteristic pathological tissue which constitutes trachoma, is the production of the other phenomena of inflammation, such as the increase of the flow of the blood to the parts, the adenoid mucous tissue becoming infiltrated with white blood-corpuscles and lymph cells, the exudation of liquid elements of the blood into the surrounding tissue, and the formation of new blood-vessels. While these lymphoid changes are going on in the deepest structure of the lid, the epithelium also undergoes characteristic changes. Individual cells which often become stellate, become greatly distended, the nuclei may become pressed to one side, producing so-called goblet cells; their contents become discharged, and frequently the superficial epithelial layer is thrown off, leaving a dry, irregular, papilliform surface. In this way to a large extent, the mucous membrane may become destroyed or transformed into a mass of fibrous connective-tissue, thus losing its

function as a secretory membrane; a condition of distressing dryness is produced and a shrinking of the tissue; the hair-follicles of the tarsus become distorted, resulting in trichiasis and entropion. The palpebral fissure often becomes shortened by the production of inflammatory products at the canthi, thus interfering with the normal function of the lids. By mechanical irritation and the loss of normal physiological secretions the cornea becomes hazy, the epithelium becomes diseased, blood-vessels grow upon its surface, and irregular astigmatism is produced. The pathological process may extend further, resulting in ulceration and destruction of the corneal tissue, producing perforation of this membrane, in its turn resulting in anterior-staphyloma, and thus shut the victim up in everlasting darkness. For the mechanical irritation of the cornea by the enormous mass of granulation tissue on the lids may produce complete opacity of the cornea, which results in blindness.

### ETIOLOGY OF TRACHOMA.

In regard to the etiology of trachoma, it should be noticed that it is distinctly a local disease and is not a symptom of any constitutional dyscrasia. It is due to a specific germ. It seems to act only on the conjunctiva, producing a pathological product to be found nowhere else.

Trachoma is admitted by all authorities to be a contagious disease, the disease being produced by the secretion of a trachomatous eye being conveyed to another. The purulent and muco-purulent secretions are the chief carriers of contagion, although it may be conveyed by these secretions becoming dry and being blown out into the atmosphere. All the secretions from a trachomatous eye, even the watery, are probably capable of reproducing the disease, if they come in contact with any conjunctival surface.

It is unfavorably influenced by bad hygienic surroundings, damp atmosphere and improper nourishment. There is a very strong predisposition to the disease shown in certain races, such as the Irish, the Jews and Eastern races. In Egypt at the present time it is difficult to find a native who is exempt from

this terrible pest. It is very common among the North American Indians, and in this race it usually assumes the malignant form. It is the most common cause of blindness among this race of beings. On the other hand, it is the rarest of all diseases among the Negro race. This was originally pointed out by Burnett, and has been confirmed by many other observers. Bochman has observed on a visit to Northern Norway, that although trachoma was frequently met with in all parts of the country, it was very much more so among the Finns, who were very dirty and lived in houses always full of smoke.

Iwanoff found out of 1,522 soldiers 19.7 % affected with trachoma. Among the recruits when admitted the percentage of trachoma was only 5.7 %, but in six months it had risen to 9.5 %. Of the soldiers who had been in the regiment longer than a year, 23.3 % were trachomatous, while the number of recruits thus affected had varied in the last five years between 2 and 5.7 %. After an examination of the lodgings of the different companies, he concluded that impure air alone did not produce the spread of trachoma; that damp lodgings favored it to a certain extent, but that direct infection with the microbes was the only cause of the spread of trachoma.

The condition of the atmosphere is undoubtedly an important factor in the production of the disease. A very interesting paper has been written recently on this subject by Reisenger. He quotes Chibret as saying, "that trachoma will not become epidemic at a height more than 250 metres above the sea-level, and that it loses its contagion at a height of 250 metres. Seggel and Barde are of the same opinion. The same author points out the fact that most of the trachoma patients come from the low regions, where there are many swamps and ponds, and a great many people crowded together. The disease is, therefore, usually endemic. In certain localities it is a constant plague.

It is quite rare to meet with the disease in children under six years of age. The same can be said with regard to people over 50 years, although the disease is unquestionably met with at all ages. It is most frequently met with in persons between 16 and 45 years of age.

## TRACHOMA AND ITS TREATMENT.

## POWDERED JEQUIRITY.

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Written for the Ophthalmic Record by

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University of Louisville.*

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In the management of this most obstinate disease, I use atropia sulph., in the saturated solution of acid boracic, from the beginning to the end. It serves several purposes for me; it puts the eyes at rest; it is antiseptic; it strangulates some of the trachomatous bodies, and the hypertrophied papillae; it relieves corneal photophobia. The boracic acid in the solution also prevents local irritation, which sometimes occurs from the long continued use of atropia sulph. I frequently add to an ounce of the solution, zinc sulph. gr.  $\frac{1}{4}$  or  $\frac{1}{8}$  for the same purpose. When a case of trachoma presents itself to me, as I stated before, I order the use of the atropia solution immediately, for the purposes I have given, and also to get the refraction of the eye. In all stages of this disease, it is my aim at the earliest moment to get the correct refraction; I cannot recall a case now in which I failed to find an error. To this error of refraction I attribute the primary cause of the disease; the disease I consider a specific one; the error of refraction simply prepares the soil for the reception of the germ; correct this error as soon as possible, and we prevent many relapses of the disease. So I repeat, it is my constant endeavor to find the existing error, and correct it by glasses. My routine treatment is, after correcting this error of refraction, or even before, to give specific directions (I often write them) as to the hygiene to be observed: how to prevent extension of the disease to other members of the family, etc. I order hyd. oxid. flav. gr. viii to gr. xii, to vaseline  $\mathfrak{z}$  j: cupri sulph. in crystal or solution, one to be applied to the granulated lid for two weeks, then the other for two weeks, thus alternating. After using the blue



stone, to bathe the eyes in hot water for ten or fifteen minutes ; not to use either of them closer than three hours to bed-time. I find a large majority of more acute cases yield readily to this treatment, in connection with tonics. In some of the more advanced and severe cases, I puncture each trachomatous body with an electrolytic needle. Where scarification is indicated, I use an electrolytic knife, and rub in thoroughly acid boracic pulv., hyd. oxid. flav. oint. or pyoktanin solution. In many cases, I give pyoktanin solution for home use. I find some cases in which cauterizing is of much service. Again I find some cases in which there is great hypertrophy of the papillæ, completely concealing the trachomatous bodies, in which I get a wonderful lot of good from the use of the curette. Very occasionally a case in which the removal of the cul-de-sacs is of service. But in the old cases, or even more acute cases, in which all other remedies appear to fail—even in some cases in which there is free suppuration, and again ulceration of the cornea, with pannus, and sometimes in cases in which there is no pannus, I get more wonderful results from the use of the powdered jequirity.

Since the uses of jequirity were made known, I have put it to many practical tests, and have yet to have it to fail me. I know of much that has been written against it, by the best men of this and other countries, but my faith in it has never been shaken. For many years I have given up the use of the infusion of jequirity as dangerous, and have instead had made an impalpable powder. I claim for this powder that it will, in one application, do more than several applications of the infusion, with none of its dangers ; that the powder will keep indefinitely if kept dry ; that its action is easily confined, and does not spread to the tear-ducts and other places where its action is not wished ; that it will not produce ulcerations of the cornea, as it is claimed the infusion does. I have used it numbers of times in cases of corneal ulceration, with trachoma, with much benefit. The making of the powder in an open mortar is attended with some danger. The party who made it for me has been unable to smell anything since.

Some cases of severe trachoma, with pannus, I treat entirely with the pulverized jequirity, making three, four, five or six



applications. Many cases, in which I had unsuccessfully tried all other treatment, before I knew of jequirity—many of them having passed from me through other hands with similar results—returned to me afterwards, and by the use of the jequirity have been restored to useful vision. Of course I do not claim vision  $\frac{20}{20}$  in such cases, but when they can be brought from perception of light, or counting fingers at a few feet, to vision enabling them to move around comfortably—vision equal to  $\frac{20}{40}$  or even more—I call the result good. I find some of these cases, of course improve on other treatment between the applications of jequirity powder, and many of them get the same treatment that had been tried by myself and others with no good results, so I think the honor must be given to the jequirity. To those who are afraid to be as bold as I am in its use, I suggest they use it on their more hopeless cases. There are many people, in this country, who are considered hopelessly blind, to whom useful vision can be restored by the use of jequirity powder.

My method of using it is as follows:

I make a mop or brush by twisting a little surgical cotton on a match or wood tooth pick, and get a small portion of the powder on it by dipping it into the powder dry. I evert the lids and apply the powder by dusting it on the conjunctival surface. I never do this without having a perfect record of vision, and the condition of the eye, and usually use it in but one eye at the time. I send the patient out with the direction that nothing be done to the eye, not even to bathe it unless the swelling and pain should become too great to bear. I see the patient daily. Should the pain and swelling become too great, iced cloths, hot cloths, boric acid or carbolyzed water applied for a while controls it very readily. Occasionally I have had to give morphia to a timid patient: not over twice in all the cases in which I have used it. In four or five days if the other eye is involved, I make the application then in the same way, in the mean time making the usual application, such as atropia sulph, cupri sulph, ammonia muriate, argent. nitrate or hyd. oxid. flav. ointment, to first eye treated.

In a few days, if necessary, the jequirity can again be used. As I stated before, I have used it in cases in which the cornea was much involved with no bad result. I have used it in cases in which murco-purulent discharge was excessive. In fact, in cases in which all other treatment had failed no matter what the condition of the cornea, I would not hesitate to use the jequirity. I have at times given it to patients to use on themselves or members of their family. Under such circumstances, I have used it on some members of the family, so they know how to manage it. This I do not advise only under extreme circumstances, such as is often the case, the family being very poor, and living at a distance, unable to send but one for treatment. Of course in these cases no accurate record of vision can be gotten, some of the cases, I will report, have been reported before.

Chas. M. has had granulated lids for years: pannus and ulcers of cornea, V. R. =  $\frac{2}{200}$ , V. L. =  $\frac{3}{200}$ , jequirity applied three times V. R. =  $\frac{8}{200}$ , V. L. =  $\frac{16}{200}$ .

W. B. D. an ancient case of Trachoma with pannus V. R. =  $\frac{2}{200}$ , V. L. =  $\frac{10}{100}$ , jequirity used twice, V. R. =  $\frac{16}{200}$ ; V. L. =  $\frac{20}{200}$ . S. D., V. R. = perception of light, V. L. =  $\frac{1}{200}$ , jequirity used four times. V. R. =  $\frac{20}{40}$ , V. L. =  $\frac{20}{40}$ .

Mrs. J. S., V. L. = counting fingers at six inches, jequirity used once, V. L. =  $\frac{20}{200}$  +.

Thos. C., V. R. =  $\frac{2}{200}$ , V. L. =  $\frac{4}{200}$ , jequirity used twice, V. R. =  $\frac{20}{200}$ .

Ben A. Has had bad eyes all his life. Old trachoma with pannus, V. R. =  $\frac{5}{200}$ , V. L. =  $\frac{5}{200}$ , jequirity used once, March 3rd, 1891, V. R. =  $\frac{20}{70}$ , V. L. =  $\frac{20}{200}$ .

Miss Lizzie T., Trachoma with pannus for six years, V. R. =  $\frac{3}{200}$ ; V. L. =  $\frac{2}{300}$ ; no improvement with glasses, jequirity used twice, V. R. =  $\frac{20}{40}$  with + 1.50 D. c. axis 135°, V. L. =  $\frac{29}{40}$  + with + 2 D. c. axis 75.°

These are a few of many. Many of these cases with only perception of light, have been able to see to go anywhere in from three to ten days after the use of the jequirity. Two cautions I must repeat. Have a record of the patient's vision before the

use of the jequirity, and see the patient daily. These instructions I have occasionally failed to follow myself, still I advise others to not neglect them. The jequirity powder must be very carefully made. The shell of the bean is very hard, and if not completely bolted out, will do much harm. The powder I use is as fine as flour. Its action is perfect. There is often an elevation of temperature with chilly sensations following the use of the jequirity, showing its action is not entirely local. A druggist in this city has a supply of the powder constantly on hand.

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## TRANSPLANTATION IN MINOR DEGREES OF ENTROPION.

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*Read before the Section of Ophthalmology at the Kansas State  
Medical Society in Wichita, May 13, 1891.*

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BY J. E. MINNEY, A. M., M. D.,  
TOPEKA, KANSAS,

*Professor of Ophthalmology and Otology, in the Kansas Medical College.*

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### TECHNIQUE OF THE OPERATION.

The hands and instruments of the operator and assistants are aseptic.

The integument of the lids, face, brow and forehead on the same side with the eye to be operated on are washed with soap and warm water. Again washed with a warm saturated solution of boracic acid or one to 1000 of bichloride. The lids of the eye are separated, and the eye douched with a few tablespoonfuls of the boracic acid solution. The lids are then everted and their mucous membrane douched thoroughly, as the eye. The skin from which the graft is taken, preferably from behind the ear or

from the trochanteric region or forearm, is cleansed in the same manner as the lids of the eye operated on, and a piece of absorbent cotton wet with the warm boracic acid solution, is kept on the surface, until the surgeon desires to remove the piece.

The lid to be operated on is again everted and douched with a few dropper fulls of the warm acid solution. The horn spatula is placed beneath the lid to support it, and is held by an assistant while the incision is made.

The incision is made corresponding to the inverted cilia, extending from a point 2 to 4 mm. beyond either side, 2 mm. in depth, being careful to keep well on the inner border of all the cilia, it should reach down well, separating the mucous membrane from the cartilage.

The lid is let return to its normal position; a compress of absorbent cotton, which has been wrung out of a hot saturated solution of boracic acid or water previously boiled, is placed over it and held in situ by an assistant until the graft is ready to be inserted. The graft is from one third to one half longer than the prepared incision and from 1 to 2 mm. in width. It requires two incisions to block it out. The incisions begin and terminate at the same point, including an elliptical shaped piece of skin, the graft, of the required length and breadth. A small sharp pointed scalpel is the preferable knife for this operation.

An assistant sponges with absorbent cotton, squeezed dry as possible out of the acid solution, or boiled water cooled, and the surgeon with a pair of fixation forceps, catches hold of the point of the graft and with a pair of small blunt pointed scissors curved on the flat, frees it from its moorings by five or six snips.

The assistant everts the lid, sponges the clot out of the opening, and the graft is placed in position, cut surface to cut surface, and pressed in gently until it is even with the surface margin of the lid and the ends tucked in smoothly. The lid is let return to its normal position and when closed the margin of the lower lid is seen to coaptate, holding the graft in position.

Two or three sutures are required to close the wound from which the graft has been taken, and over this a strip of adhesive plaster is placed and it heals by first intention.

A compress of absorbent or borated cotton, wrung dry out of hot water or acid solution, is applied to the eye, and over this three or four layers of absorbent or borated cotton dry, and a bandage firmly applied over all; and the patient is directed to return in forty-eight hours, at which time the bandage is removed. By this time the graft is usually attached. A lighter compress is applied, the same precautions of cleanliness having been observed, and within the next forty-eight hours the bandage can be removed permanently.

Although having three entropium forceps, in this operation I use none:

1. Because the pressure on the tissues causes oedema of the lid, which is unfavorable to primary union.

2. The hemorrhage comes on after the graft is in and when the forceps are removed, which has a tendency to wash it out and also to form a clot, and separate the cut surfaces.

- 3 It is difficult, sometimes impossible, to get the lid in position with them to operate.

Without this pressure and by the spatula, the hemorrhage is free but soon over; the parts are depleted and by the time the graft is ready to be placed, a warm clot has formed in its bed; the graft fitted in, there is comparatively no more hemorrhage.

The tissues of the surrounding parts are not bruised, there is no oedema, and nature is ready to go to work immediately.

A warm slightly alkaline solution in a clean dish, should be in readiness, to hold the graft in case it could not be placed in situ right away. For should it be too large it must be pared down and it must be free of fat, and during this time it is to be held in the solution. It is best to place it immediately, when free, in position, if it will fit.

Time is an important element in this operation. Should the graft turn a dirty ashen grey color, while manipulating it in the water, it is probably dead and should be thrown away.

The small blunt pointed scissors curved on the flat, are an important factor in removing the graft. When pressed down firmly there is but little danger of mutilating the graft.



The underlying tissue is softer than the derma and they invariably cut below in the softer yielding tissues.

It is better to have the graft too large than too small. Should it grow, it can be pared off weeks afterwards without pain to the patient, as it remains insensitive for a long time.

Should the pressure of the lid continue to irritate the eye, a canthotomy will relieve it.

If a few cilia grow through the graft, the cautery needle will destroy them.

An oily substance should not be smeared on the brow and lid. It gets between the lids and in the wound and defers union.

Both eyes should be bandaged for the first 48 hours if the patient cannot prevent synchronous movement of the lids.

The graft should not be placed in the alkaline solution unless absolutely necessary.

If considerable time has been consumed in the operation, or in aged or poorly nourished patients, compresses wrung out of hot water or boric acid solutions and applied to the eye for five or ten minutes, changing them several times during the time, before bandaging, insures the vitality of the graft.

The part from which the graft is to be taken should be examined by a three inch glass and the surface having the fewest small hairs or down selected.

The above operation is suitable to the upper or lower lid.

No anæsthetic but cocaine applied locally, is required.

There is no deformity.

It does not meet the graver forms of entropion, although during the past two years I have employed grafting in cases where formerly I did the Hotz operation, and especially in trichiasis, where I formerly destroyed the cilia.

If the lids are granular, treatment can be continued after the third day of the operation.

The thorough cleansing, depletion and rest, all favor cure.

To have clean and warm instruments, they are kept in a warm saturated solution of boric acid during the operation, when not in use.



A NEW METHOD OF OPERATING ON THE  
"FROG-SPAWN-LIKE" OCULO-PULPEBRAL FOLDS.

Written for the Ophthalmic Record by

EUGENE SMITH, M. D.,

DETROIT, MICHIGAN,

*Professor of Ophthalmology and Otology, Detroit College of Medicine.*

---

My dear doctor :

In response to your invitation to give the Record a description of "my operation" for relief of trachoma, allow me first to say the operation *per se*, is not original with me, but as methods differ, I will gladly give you mine for the benefit of the readers of the *newest*, and perhaps *to be, newsiest* Ophthalmic Journal.

I find the operation most applicable in cases of isolated trachomatous bodies, and in cases where the "frog-spawn like deposits" are in folds, running the full length of the retrotarsal folds, quite aptly described by Noyes in his recent work as follows:—"redundant gelatinous granular masses, which, when the lids are everted, resemble the everted rectum of the horse after defecation."

Some years ago Galizowski of Paris, gave to the profession his method of *excision* of the retrotarsal folds in cases of trachoma, but the method has not been generally adopted. Later the "squeezing process" or "smashing method" of dealing with them was advocated, and Noyes of New York, Knapp, and others have had special forceps made for this purpose. When done in this way the folds are taken between the blades of the forceps and by a squeezing and dragging motion combined, a bloody serum is squeezed from the conjunctiva, the trachomatous-bodies being "smashed," and disappearing by absorption. I believe comparatively slight reaction follows. The method I pursue is as follows:—I use an ordinary pair of curved forceps, similar to iris forceps, but without teeth, and having a *long curve*.

In the case of isolated bodies, I slit the conjunctiva across the top of *each*, and placing a blade of the forceps on either side of it, *squeeze it out*. In cases having the redundant folds I slit the conjunctiva with a Graefe Knife the full length of each fold and, with the same forceps, make a squeezing and *stripping* motion, and on examination, find that I have squeezed out, not only a bloody serum, but the gelatinous bodies *in toto*. Reaction is slight, and the cure is more rapid than when the squeezing has taken place without incision. In the *diffuse* variety of thickening, I have assisted the cure by *scarifying* the thickened edge of the everted cartilage and *squeezing* with a pair of entropion forceps, one blade in the retrotarsal fold, the other in front of the cartilage. In cases of this character I do not find the "gelatinous" matter in the material squeezed out, but think cases so treated recover more quickly than by ordinary methods.

Does this "squeezing stripping" process cure more rapidly? In answer to this question I may say that to-day (May 29, '91), two (2) cases were in my office whom I operated upon by this incision and squeezing process six and nine months since, and each was cured in two to three weeks. Before I operated, they had been treated for many months by ordinary methods without much relief. I can strongly recommend its trial by all ophthalmic surgeons, and like jequirity, in suitable cases, it will prove a boon to the surgeon as well as the patient. The operation is made under influence of cocaine, and may be used as an adjunct to the ordinary treatment.

Most truly yours,

EUGENE SMITH, M. D.

The small, nearly imperceptible linear cicatrices which follow the method above described, are of *no importance*, and seemingly disappear entirely in a few weeks.

130 LAFAYETTE AVE.

E. S.

## CONJUNCTIVITIS GRANULOSA.

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### PUMICE-STONE.

---

Written for the Ophthalmic record by

PETER D. KEYSER, M. D.,

*Professor of Ophthalmology, Medico-Chirurgical College.*

PHILADELPHIA, PA.

---

Conjunctivitis Granulosa is known to present itself in different forms and stages, and as one of the most difficult diseases of the eye to cure, especially when chronic, and as there have been so many treatises upon it giving its various forms, pathology, course and treatment, it is not my purpose to touch upon any thing but a description of one peculiar form, which is but rarely found as a remnant or after-stage when the general characteristics and inflammation have passed away. It is so infrequent, that in the course of twenty-five years experience I have observed but three cases beside the one specially detailed below, and which gave me much consideration, on account of my inability to cure under the generally known methods of treatment at the time.

The form observed is characterised by a few isolated or grouped raised points on the tarsal conjunctiva of the upper lid, having a reddish yellow appearance of a hard cartilaginous feeling to the finger, and are so minutely attached that they cannot be raised by the finger nail.

The conjunctiva generally appears in pretty good condition, having only a very slight hyperæmia. There is a small quantity of viscid mucous discharge from the eye, with an irritable feeling only.

June 1st, 1889, Captain B., U. S. Army, brought his son LeRoy, æt. 13, to me for examination of his eyes, with the history that, while at Fort Bennett, Dakota, in 1881, he became snow blind and conjunctivitis set in. He was treated at that Port from March to July, of that year, when he went to Marshall, Mich., under treatment from July to October; then at Fort

Munroe, from October 1881 to May 1884, during which time he ran the routine of treatment for conjunctivitis granulosa: blue stone, alum, lunar caustic (mitigated), tannin and glycerine, and even the granulations cut off with knife and scissors. From May to September 1884, treated at Ann Arbor, Mich.; from September 1884 to May 1886, at Fort Lincoln, Dakota, where jequirity was tried, and still not cured. From May 1886 to March 1887, at Fort Sully, Dakota, where powdered borax was rubbed in the conjunctiva without benefit. March 1887, went again to Marshall, Mich., under treatment until August 1887; then to Madison Barracks, N. Y., until the Spring of 1889 when he went to Newark, Del. From the latter place he called to see me on his way again to Marshall, Mich., for the Summer.

The condition of his eyes on June 1, 1889, was as follows:

*R. E.* Strabismus convergens. Hard cartilaginous form of granulations, isolated and in small groups on the tarsal part of the conjunctiva of the upper lid. They were firm and solid, and felt to the finger and nail like gristle. Cornea slightly hazy. No granulations in the conjunctiva of the fold nor on the lower lid, which really appeared very little affected. There was a viscid mucous discharge from the eye.

*L. E.* In somewhat the same condition as to the cartilaginous granulations on the tarsal conjunctiva, but not so many nor so large.

As he was leaving immediately for the West, I prescribed an ointment of hydrargyrum oxidatum flavum to be rubbed in the eyes daily while away. I did this hoping that it might irritate somewhat, and by setting up a certain amount of inflammation soften the granulations and then, by after treatment, 'be able to absorb or remove them.

He returned to my office September 5th, and I found no change in the condition of the eyes in the least. The ointment had not created any inflammation. Being aware that he had really undergone all the various methods of treatment in use and suggested in the literature, it became a matter of thought with me what to do, especially as it appeared not wise to re-inflame the now quiet conjunctiva. Knowing the gentle action of fine pumice stone upon hardened thickened tissue, I determined to try it in

this case, and see if, by the friction on the top of each isolated and grouped granulation, they could not be rasped down. I procured a piece of fine pumice and cut it into a broad pencil, with one flat surface and commenced the same day, Sept. 5th, with the rubbing. The operation was very painful but the lad stood it bravely. After the operation cold water applications were made over the closed eye lids. Little or no inflammation was created. The next day a 2% solution of cocaine was instilled into the eye lids before the operation of rasping. It went much easier on account of less pain. The operation was again repeated on the 7th and on the 10th, 14th, 18th, 21st, 28th of September and on October 5th, 12th and 19th, by which time the cartilaginous-like formations were all rasped down, and the whole conjunctiva perfectly smooth and even. There was but slight congestion in the eyes and now only Acid Borici gr. x to  $\bar{3}$  i, was instilled into the eyelids three times daily. Every thing was so well that, on the 26th of October, I operated for the strabismus, having previously corrected his defect in refraction which was :

*R. E.*  $+ 1. D \text{ } \ominus + 1. D. \text{ cyl. } 90^{\circ}$ ; *L. E.*  $+ 0.5 D. \text{ } \ominus + 0.5 D. \text{ cyl. } 90^{\circ}$ .

His eyes have remained very good up to this time July 1st, 1891, and he is now a student in college.

In connection with this I desire to state that about one year ago, Professor Manolescu, of Bucharest, wrote to me requesting that I would try his method of brushing out the follicles from the conjunctiva, in severe forms of the follicular conjunctivitis granulosa. It is done by a very stiff tooth brush, made firm and stiff enough by cutting the bristles off to the length of a quarter of an inch. I have had the most happy success with this method in the treatment of some very troublesome chronic cases of this disease where no other treatment gave relief, and can recommend the same very highly. The operation is very painful and should be done under an anesthetic, as cocaine does not give the necessary relief.



## PERSISTENT HYALOID ARTERY.

Written for the Ophthalmic Record by GEO. H. PRICE, M. D.  
NASHVILLE, TENN.

Dr. John B. B. called, February 25, to have his vision investigated, which has been defective in right eye for some twelve years. Examination revealed loss of central vision in right eye, and the ophthalmoscope showed large choroidal patch covering the region of the macula and extending beyond in all directions. Above and toward the disc the patch was white and glistening, with margin clear cut, while, toward the outer and lower margin it was much pigmented, being quite dense at points.

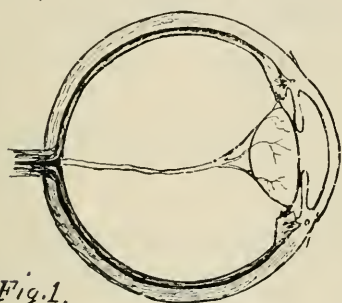
The patient gives history of good vision until he was about 18 years old, at which time he suffered considerably with his right eye, which resulted in the central scotoma as now found. This condition had been diagnosed by others, whom the doctor had consulted, hence he was informed in regard to this point but the special feature to which I desire to call attention, is indicated by the heading of this report, and of which he says he was not informed.

Upon looking into the eye, the first thing which attracted my attention was a peculiar condition of the lens in its upper half. There seemed to be several small opaque lines running from the center of the lens upward, one slightly to temporal and other slightly to nasal side. Turning on stronger lenses I began to make out that these lines branched, the branches being very fine, and these again branching. Upon closer inspection I also discovered a branch given off and going toward the lower margin of lens, which presented the same features as those above, but made out with more difficulty. An idea of the condition, as seen with the ophthalmoscope, may be had from figure 2.

The point from which these processes came seemed located just within the vitreous, and hence, as the eye was moved, there was a slight wavy motion transmitted to the main branches, showing that they were not attached in entirety to the lens or its capsule. The point to which these branches converged was now looked into, it was pale blue, translucent, and situated about 2 to 3 mm. behind the lens, and a prolongation extending



back into the vitreous. Following this extension, a canal could be plainly made out. It grew slightly larger in its approach to the disc, while at the same time it became more translucent, so

*Fig. 1.**Fig. 2.*

that it was almost entirely transparent where it was attached to the disc, at the bifurcation of the central artery. When the patient was directed to look up, the canal could be made out from disc to within a short distance of lens whence the branches were given off. Upon motion of the eye it took on a slight wave-like motion. Figure 1 gives a very good idea of the appearance. While this condition had been present since birth, the patient had noticed no dimness of vision until after the choroiditis which resulted in the scotoma, before spoken of.

Being struck with this and the patient telling me that he was slightly deformed on right side, I concluded to examine his left eye. Looking into the left eye, I immediately saw that there was a small dark spot, which upon investigation proved to be on the posterior portion of the capsule.

I asked patient about vision in this eye. He told me that there had always been a spot in front of that eye, which obscured a portion of the word at which he looked while reading, and that it always advanced with the movement of the eye, across the page. On looking into the eye I could plainly see a small remnant of the hyaloid artery, attached at the center of disc at the point of bifurcation of the artery, and extending into the vitreous 2 to 3 mm. The vision in this eye is 20—xx and patient does not complain of spot when looking at distance.

I report this case as the condition found in right eye is not often met with, and again because he had been examined several times and his attention had not been called to this feature.

# THE OPHTHALMIC RECORD,

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## THE AMERICAN MEDICAL ASSOCIATION.

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This large body of medical men held its annual session in Washington, D. C., May 5 to 8. As was expected, President Briggs, of Nashville, directed and controlled the business of the general session with admirable tact. He decided all questions promptly and without wavering, and thus enabled the Association to transact its business in a reasonable period of time.

The President's address, delivered on the first day, was short, occupying 31 minutes, but was brim-full of pertinent thoughts and good suggestions. One of the best suggestions made was: that an Executive Committee be created, to consist of two members from every state society in affiliation with the Association, the members to be elected by the state societies; and that to this committee be referred all matters of business, the action of the committee to be considered as final. The special committee to whom the address was referred reported recommending the adoption of the suggestion. So the idea, in some form or other, will become a feature of the Association at no very distant day.

Just how this "Business Committee" should be formed, whether by election of the state societies or by election on the part of the several Sections of the American Medical Association, is a matter worthy of careful consideration. If Dr. Briggs'

suggestion be carried out to the letter the committee will be very large, possibly too large for the good of the Association. Since the life, or at least the greatest prosperity, of the Association depends on the character of the work done in and by the Sections, now numbering eleven, it would seem not an improper thing for this Business Committee to consist of three members elected by each Section. (This suggestion will be found in the editorial columns of the *American Lancet*, June '91, page 221.) This would give us a body of thirty-three men, as the Sections now stand, who, if properly chosen, could more safely manage the business of the Association than it could be transacted by the massive body itself. An objection to this suggestion of Doctor Connor is: one Section not knowing what other Sections have done may elect its member or, if first year members, only to learn later that the combined elections give to the committee a majority from one point of the compass. This, on its face, would be objectionable but not more so than the present method of doing business.

Dr. Connor's further suggestion that the retiring Chairman of each Section be the one to succeed the retiring member of the "Business Committee" would seem, at first glance, to obviate this danger; but possibly six or more of the Chairmen may have been chosen the year before from the same part of our country.

In spite of any wish to the contrary there is a North, a South, an East, a West. In politics, in religion and in medicine each of these four great parts of a greater country desire full representation. May the best thoughts of the best men prevail in our meeting a year hence.

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## THE SECTION OF OPHTHALMOLOGY, OF THE AMERICAN MEDICAL ASSOCIATION.

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From the organization of this Section, only a few years ago, down to the present time there has been continuous and rapid progress. No similar body of men on earth is composed of

more earnest and practical workers. Its labors, if properly presented to the Ophthalmic world, would bear favorable comparison with that of any other body of men engaged in the same line of thought and practice. Its last meeting was by no means its worst. Future meetings will do well to equal it. Chairman Connor deserves the special credit accorded him by individuals and by the Section for the zeal and energy which he threw into his year's work. He presented to us the best programme we have ever had. His appointment of men to open the discussion on a paper, or on a series of papers on kindred subjects, was just the thing. A man knowing before-hand that he will be expected to discuss a certain paper will come better prepared than he would otherwise be. The fact that one or more had been appointed to open the discussion did not prevent a free and full discussion on the part of other members, provided anything of importance had been left unsaid.

The five papers on Cataract read on the first day were all carefully prepared, and the discussions that followed contained thoughts worthy of being treasured. The Editor of the Record took full notes of the discussions and will use them in future issues, in connection with extracts from the papers, which, of course, cannot be made until the Editor of the Journal of the Association sees fit to publish the papers in full. It was to be expected that at least some of the work of this Section would be published within two months after the adjournment of the Association, but nothing of the kind has been done. Surgery, Gynecology and Practice seem to have driven into the back-ground all material from other sections. After these older sisters have had their say then the younger—may I say more sprightly—will be allowed to speak. Until this yet-looked-for time comes *notes* would be out of place since they could not be accompanied by extracts.

What has been said of the character of the papers read on the first day is equally applicable to those read subsequently. The discussions also continued to be to the point, consequently valuable. Notes on all of these discussions are in hand and will be presented to the readers of the Record in due form when

the proper time comes—in connection with extracts from the papers eliciting the discussion.

Chairman Connor's address was short but practical. In it he suggested that steps be taken by the Section toward collecting and republishing, in permanent form, all papers read and discussions had at any one meeting. According to a law of the American Medical Association all papers read in any Section, found worthy of publication, must first appear in the *Journal of the Association*. With comparatively little cost, at the time any paper from our Section is published in the *Journal*, plates can be made. After the publication of the last paper, all of these plates can be brought together, and after a suitable arrangement of same, a volume can be gotten out that would be of great value not only to members of our Section but also to Ophthalmic Surgeons living in this and other countries who are not members. The book would not be very large, and, gotten up as suggested, could most likely be sold for two dollars or less. There might not be a very large sale of the first volume but the time would come, the value of the publication having become known, when the edition would have to run up into the thousands. The matter will be duly considered between now and the Detroit meeting, at which time final action will most likely be taken.

A second suggestion found in the Chairman's address was to the effect that the Section of Ophthalmology have an annual dinner on the second day of the meeting of the Association. A committee reported favorably on this feature of the address and it was decided that the first of these Section dinners be indulged in at the Detroit meeting next June. The cost is to be two dollars a plate, every member attending the dinner paying his two dollars. This will no doubt be a source of great enjoyment, and a means of drawing together more closely the brotherhood of the Section.

Still another suggestion was that a committee be appointed to look after the good of the Section. It was unanimously agreed that such a committee should exist. The Chairman appointed Dr. S. C. Ayes, of Cincinnati, Chairman of committee, to serve three years, Dr. F. C. Hotz, of Chicago, to serve two



years and Dr. Edward Jackson, of Philadelphia, to serve one year. At the expiration of each term of office a successor shall be elected or appointed for a period of three years. It is expected by the Section of Ophthalmology that, in due time, all the other Sections will have such a committee, and that, eventually, all of these committees will organize for the common good of all the Sections. Great good may come to the Association from this new move.

The newly elected officers of the Section of Ophthalmology are :—Dr. J. L. Thompson, of Indianapolis, Chairman, and Dr. George de Schweinitz, of Philadelphia, Secretary. The work of the Section for another year is in good hands. There is no doubt but that the new Chairman aided by his Secretary will make the next meeting equal to the last—it will be hard for them to make it superior to it.

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### STEVENS' NOMENCLATURE ADOPTED.

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Not enough appreciation has been manifested toward Dr. Geo. T. Stevens, of New York, for the valuable service he has rendered Ophthalmology, in devising and introducing terms that are not only purely scientific but also wonderfully expressive of the conditions to which they have been applied, viz. Anomalies of the ocular muscles. "Orthophoria" is a word easily spoken and written, and when its derivation is once known its meaning thereafter is always clear. How much less breath it takes to speak it and how much less ink to write it, than if we were compelled to say or write: "The ocular muscles are well balanced in their action." The latter sentence is not clearer in its meaning than the former word. "Heterophoria," "an incorrect tending," a want of harmony in the action of the ocular muscles, is another term easy of comprehension and scientifically correct. The same may be said of all the terms used to indi-



cate the different forms of Heterophoria, viz. Esophoria, Exophoria and Hyperphoria.

Up to the present hour there are men who either have not comprehended these terms or else are wholly unwilling that anything good shall come from a source not peculiarly their own; for they would gladly have all of us believe that these terms are unnecessary, unmeaning and unscientific. Some few rejoicingly exclaim "no scientific body on earth has adopted Stevens' nomenclature." Such may not know that the best Greek scholars in the world placed the stamp of their approval on these terms before they were presented as a rich gift to the ophthalmic world.

There can be no doubt but that the record books of the great majority of oculists show the free and frequent use of "Stevens' nomenclature." Almost all recent papers abound in these terms. So common has become their use that authors of books cannot much longer ignore them.

It cannot be longer said that "no scientific body on earth has adopted Stevens' nomenclature." The Section of Ophthalmology of the American Medical Association, composed of a body of men as richly worthy of the appellation "scientific" as any other association of oculists on this or any other continent, performed a long neglected duty, at its last meeting, by adopting *unanimously* the "Stevens' nomenclature."

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## REFORMED NUMERATION OF PRISMS.

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Growing out of the paper read by Dr. B. Alex Randall on "the Centrad in Reformed Numeration of Prisms" and the discussion of same by Dr. Swan M. Burnett, the following "agreed-to" resolution was offered and adopted by the Section of Ophthalmology, American Medical Association:—

"That prism shall be taken as a unit whose displacing power is one centimetre at a distance of one metre."

CONTRIBUTIONS FOR THE RECORD.

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Original papers that would be creditable to the authors, and useful to the readers of this journal, will always be gladly received and promptly published. Such papers must be written *for the Record*, as it is against the policy of this journal to take, for publication as original, a paper that has been furnished, in duplicate, to some other journal.

Letters based on observations made in *private* practice, will find a hearty reception not alone at the hands of the editor but on the part of the readers as well. Unfortunately too much of such material is lost either because of carelessness or neglect. If David had forgotten his observation of a crystalline lens dislocated into the anterior chamber, and had neglected his practical experience in removing same through a corneal incision, possibly the extraction of cataract would be an unthought of thing to-day. If the Record can garner some of the thoughts of the practical men engaged in their private work, it will help to enrich the science of ophthalmology.

That great source of medical advancement, the public clinic, will be utilized. Arrangements will be made by means of which fresh and readable reports of clinics will appear in the Record. While the large clinic will be looked to for much that is good the small clinic will be expected to do its part.

Authors of papers can have reprints of same at cost of paper and press-work. If reprints are desired the author should so state at time of sending in his paper.

While the editor of the Record is not responsible for the published thoughts of contributors, he will hold himself, in duty bound, to oppose, editorially, whatever error he may have published for another, and to applaud the truths that may need emphasis.

The readers of the Record are invited to assist the editor in watching that no false doctrine appearing in its pages shall go unchallenged. Errors, whatever the source of their publication, may be combated in the pages of the Record.

## EXTRACTS

Good material that has been published in other journals will not be ignored by this. Extracts more or less copious, and, in rare instances, entire re-publication, will be made, but in every case not only the author but also the journal making the original publication will receive credit for same.

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## THIS ISSUE.

It is with a considerable degree of pride that the editor sends forth this issue of the Record. The several papers on Trachoma are worth much more than the subscription price of the whole volume. Every one of these papers can be read and re-read with profit. In the department of Otology will be found matters of interest to those practising Otology as well as Ophthalmology.

As will be seen 32 pages could not contain all that was prepared for this number, and as a consequence you have the 8 extra pages. This will not cause the number of pages of reading matter in No. 3 to be less than 32.

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## THE NEXT ISSUE.

In the next issue we will begin the study of Sympathetic Ophthalmia, by the publication of a translation of a sharp and spirited discussion of the subject recently between De Wecker and Abadie, the one favoring resection of the optic nerve and the other injections of the bichloride of mercury and, in the event of this failing, enucleation. Much thought is now being devoted to this subject on both sides of the Atlantic. The Record will garner some of them.

The study of Trachoma will be continued in the next issue. It will contain a paper on the "Pathology of Trachoma," by Dr. Swan M. Burnett, who holds, and in this paper expresses, views differing materially from those given by Dr. Fulton, in this number of the RECORD. The virtue of the Iodide of Silver in the treatment of this disease will be strongly set forth by Dr. Hodges, who introduced it, and whose experience with it has been most favorable.

The letter from Dr. Roosa, on "muscular insufficiencies," published some months ago in the "Ophthalmic Review," will be *reviewed* in the next issue of the Record. As we read it there are errors in it that should be combatted. This, as all other reviews of current Ophthalmic literature, will be conducted in a spirit of fairness.

Other papers on subjects of no mean importance will be presented. Some of these papers are already in hand while others are in process of preparation.

No. 3 will appear on the first day of September.

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#### SAMPLE COPIES.

No. 1 of the Record was sent to every Ophthalmic Surgeon, in the United States and Canada, whose address had been learned. A good proportion of these have already become subscribers, and others no doubt intend to subscribe. No. 1 was sent out so far ahead of its date of publication it is reasonable to suppose that some, having made up their minds to become subscribers, seeing that the second issue would not be out until about August 1st, deferred doing so for a time, until possibly, the matter has been temporarily forgotten. As a gentle reminder of the existence of such a publication No. 2 is sent also as a sample copy to those who have not yet subscribed, with the hope that they will find it such an agreeable visitor they will want all subsequent numbers to follow it. A subscription blank will be found enclosed in each sample copy. If *you* wish its visits continued please fill out blank and forward it with the subscription price at once. If you are not heard from between now and the time for No. 3 to go to press it will be taken for granted that, for cause best known to yourself, you do not wish to be a subscriber; and only the necessary number of copies will be run off. No more sample copies will be sent to persons who have received Nos. 1 and 2.

## EXCHANGES,

The Record's exchange list is growing. None so far have spoken a hard word against the new-born Journal, while several have contained paragraphs filled with the kindest expressions of welcome. With its politest bow it will enter monthly the sanctum of its valued exchanges, bearing good will to all and envy to none.

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## NOTICE OF ADVERTISEMENTS.

F. A. Hardy & Co., Manufacturing Opticians, whose full page advertisement is in this issue of the Record and will continue to appear in every number of the current volume, are in every way worthy of the large trade now at their command, Ophthalmic surgeons cannot do better than have them do their lens work. The writer's experience with them, covering a period of several years, has been most satisfactory.

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The Perfection Chair has been in constant use in the practice of the editor of the Record for the past two years and has given perfect satisfaction. He would not exchange it for any other chair he has seen. See Miner & Elberg's advertisement in this Journal.

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## BOOKS AND PAMPHLETS.

## THE CLINICAL USE OF PRISMS.

The above is the title of a little book by Ernest E. Maddox, M. B., of Edinburgh. It should be read and re-read by every man engaged in the practice of Ophthalmology, who has not already made himself perfectly familiar with the subject. It can be had of F. A. Hardy & Co., Chicago, Ill., at a cost of \$1.00.

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## PAMPHLETS.

Quite a number of reprints have been received, of which due notice will be taken in future issues.



## Department of Otology, Laryngology and Rhinology.

GEO. H. PRICE, M. D., EDITOR, 621½ Church Street,  
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### SECTION OF LARYNGOLOGY AND OTOTOLOGY OF THE A. M. A.

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The programme prepared and presented in this Section, was indeed full of interest to all who had the good fortune to be in attendance upon the meeting of the Association May 5 to 8 inclusive.

While this was the case, yet it was unfortunate that the President Dr. Carl Seiler, was unable to be present.

This section is of growing importance, and its influence is being felt in all departments of work in the comprehensive science of medicine, therefore it is to be regretted that some of those who are looked upon as investigators by reason of their opportunities and abilities, should absent themselves from the meetings, and more especially when they are given prominent places upon the programmes.

The papers read and discussed were full of timely and thoughtful suggestions as to methods of investigating, diagnosing and treating, not only those conditions which are known, but also new manifestations of complicating conditions which have received special consideration of those into whose hands they have fallen. As yet none of the papers from this section have been published in the Official Journal of the Association, and hence we are deprived of the pleasure of presenting to our readers the thoughts of those who favored us at that time, however we hope the next issue will bring us some of the good tidings promised from this section.

## ON THE INFLUENCE OF NASO-PHARYNGEAL OBSTRUCTIONS UPON THE HEARING.

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Written for the Record by

OREN D. POMEROY, M. D.,

Surgeon to the Manhattan Eye and Ear Hospital.

Prof. of Otology, N. Y. Polyclinique, Etc.

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Inasmuch as Laryngologists and Rhinologists are in the habit, at this time, of removing all sorts of Naso-pharyngeal obstructions, with the view of restoring a greater or lesser loss of hearing, it seems to the writer pertinent to inquire into the results of these operations upon the hearing, and to ascertain how far the hopes held out for improved hearing are realized.

In obstructions of the nostrils from a deviated septum, polypi, hypertrophy of the turbinated bones, spurs on the septum, or even bony closure of the nares, we have more or less difficulty in nasal respiration.

This results in mouth breathing or a tendency towards it, with its well known mischievous results, which will not be enlarged upon here. In the effort of inspiration through a narrowed nostril the air supply being insufficient, rarefaction of the air in the upper pharynx occurs, and air is actually abstracted from the drum cavity; in expiration the reverse condition obtains;—air is forced into the drum cavity, and there is likely to be a to and fro motion of the drum membrane. This inevitably produces a certain amount of mischief to the drum membrane and the middle ear mechanism, from what may be easily conceived to be of the nature of traumatism. I would not assert however, that closure of one nostril alone, with the other normally pervious would necessarily produce this result.

Another objection to closed nostrils is, the inability of the patient to properly cleanse the parts by blowing the nose, using the handkerchief etc. In this condition, the catarrhal state is aggravated and likely to be perpetuated.

Again;— these swellings sometimes secrete enormously, to the great obstruction of the nostrils and annoyance of the patient, also aggravating any pre-existent catarrhal con-

dition. I firmly believe that the course of rhinitis tends towards pharyngitis of the upper and lower spaces as well as disposition to involve the Eustachian tubes and drum cavities. It follows then that a commencing rhinitis, arrested, may ward off an attack of pharyngitis and otitis. Any treatment of the nostrils, therefore, that improves their condition, acts towards *prevention* of deafness, or at least amelioration of the ear catarrh.

When however, we are confronted with a middle ear catarrh acute or chronic, new conditions arise, and the state of the drum cavity and Eustachian tube demands attention.

Where there is acute hyperaemia of the drum cavities, a treatment of the throat is likely to be of direct influence; and leeches to the ear, hot applications, the aural douche and anodyne etc., will be indicated. Usually the drum cavities should be inflated, collections in the tympanum removed by paracentesis by inflation, besides other measures which are likely to have bearing on the condition of the throat.

In subacute and chronic aural catarrh the condition of the Eustachian tubes is the most important objective in treatment. In the first place the tubes are rarely closed;—never closed unless as the result of cicatricies consequent on reparative action after a considerable loss of substance—notably from syphilitic diseases, or more rarely from hyperostotic processes. The fact that the tube may be opened by catheterization or other method of inflation does not in the least indicate that tubal functions are properly performed. The air supply of the tympanum should always be adequate and the Eustachian tubes should keep this supply by their capacity for opening by muscular action often enough to maintain an adequate tympanal supply. The causes which ordinarily interfere with this function are, blocking up of the pharyngeal mouth of the tube by inflammatory products, swelling of the lining of the tube by catarrhal inflammation, thus diminishing its caliber so that even by the utmost effort of the tubal muscles the passage of air into the drum cavity is prevented altogether or greatly diminished. In other cases it would seem that the muscular system of the tubes is greatly weakened from atrophy of the muscles themselves—a secondary result of the catarrhal inflammation which often

ves the submucosa, when the tubal muscles partake of the inflammatory process, with the consequent atrophy. It is evident then that nasal obstructions affect the hearing only somewhat remotely, principally by abolishing or diminishing nose breathing and in a general way keeping up the catarrhal condition. It has recently been stated by eminent rhinologists of my acquaintance, that operations for the removal of nasal obstructions, more especially of enlarged turbinate tissue, had resulted in conspicuous and permanent improvement to hearing, quite beyond the best hearing obtainable by inflation during the earlier portion of treatment.

These were cases of chronic aural catarrh of some years standing. I have all my life, taught that in these cases the most improvement to hearing was that obtainable by inflation, being careful that exactly enough air was forced into the tympanum to produce a correction of the collapsed drum membrane. This proposition is based on the fact that deafness in these cases depends on obstructed tubes in many instances, hence improvement from inflation. But there are other cases where the tube is too patulous, and the deafness depends on changes in the condition of the middle ear mechanism, the result of ear catarrh, in which rigidity of the ossicular chain of bones, or even true ankylosis results, together with sclerotic changes in the lining of the middle ear, and the formation of adhesive membranes in the ear cavity, which may so tie up, so to speak, the middle ear mechanism as to seriously interfere with its operability. In this condition, can it be believed that the removal of nasal obstructions will greatly improve the hearing? The most that can be accomplished is to possibly improve the condition of the Eustachian tubes, or to perform some of the operations for the relief of the faulty tympanal condition.

Within a few days, I have treated a medical gentleman for tinnitus and deafness, who had been through a course of treatment for nasal obstructions, without relieving the ear symptoms in the least. It was one of those cases liable to be overlooked; the appearances of the drum membranes did not indicate much of trouble; the pharynx was not specially faulty, the hearing by my watch was about 48 inches, which is ordinarily regarded

as normal, but on inflation, the hearing came up at least two feet; there was tinnitus. This observation proved insufficient ventilation of the drum cavity and sunken drum membrane, with hearing lowered. I believe there is no exact test for normal hearing—the most hearing obtainable in a given case is not more than normal. In this case, spraying the mouth of the Eustachian tube with an astringent, and Politzer's inflation has brought the hearing up about one-third, with almost total abolition of the tinnitus.

I think I am right in asserting that many most excellent men treat the throat with the expectation that the condition of the ears will correct themselves. Two or three years since, I treated a medical man for a slight chronic catarrhal otitis media. I did not regard the nostrils as sufficiently obstructed to call for removal of any enlargements. His hearing was accurately noted by my watch. After a time I discharged him in an improved condition.

Subsequently on meeting him on the street, he remarked that he was entirely cured; he had had his nostrils operated on; every possible obstruction had been removed, and his condition had been declared perfect. I asked him to call and let me test his hearing. He did so, and I found the hearing considerably lowered from the condition existing at my previous examination. I will not enter here on the discussion as to how often operations in the nostrils provoke otitis. I believe most men admit that these do, at least occasionally. I believe the vicinity of the Eustachian tube should be treated with a certain amount of gentleness. I have even seen Politzer's inflation produce considerable harmful traumatism to the ear.

In regard to the removal of adenoid growths; I believe there is no question as to the advisability of doing so when the nasal respiration is hindered, or where a post-nasal catarrh is aggravated by their presence, which probably is always the case.

If the Eustachian tubes are encroached upon by these growths, so as to act mechanically in interfering with the ventilation of the drum cavity, they should be removed. Fortunately the latter condition exists somewhat rarely, as the growths oftener are found in the vault of the pharynx, by preference in the



middle line, above and internal to the region of the Eustachian tubes

I have heard of most extraordinary improvements to the hearing from the removal of these growths, but have never been able to verify them by careful personal observations. It seems to me that the same rule must obtain here as in nasal obstructions; that the hearing cannot rise much, if any, above the best that may be obtained by the most careful inflation. If considerable violence is used in removal of these growths, the hearing may be actually lowered. Some time since, adenoid growths were removed from the pharynx of a child under my care, whose hearing for the watch was about twenty inches in each ear.

About a month afterwards, the hearing had diminished to about four inches, and nothing seemed able to raise it above this point. There had been no inflammation apparently, and it was hard to explain the phenomenon. The result of the removal was satisfactory in every other respect.

In the foregoing observations I do not wish to be understood as opposing operations on the naso-pharynx, which just now may be a little too popular—but to give a reasonable hint as to how much good is likely to be done to ear complications by these operations.

316 LEXINGTON AVE., N Y.

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## REPORT OF CASE OF SALIVARY CALCULUS IN BARTHOLIN'S DUCT OF SUBLINGUAL GLAND.

BY GEO. H. PRICE, M. D.,  
NASHVILLE, TENN.

About the middle of June of this year, Miss E. called at our office to consult concerning a formation in the floor of mouth, which had been causing some trouble and apprehension for some months past. She said, that about one year ago she had noticed a small round hard mass in the floor of mouth on right side,

which at that time was about the size of a duck shot, which from time to time became much irritated, causing pain and inconvenience more noticable during mastication. At this time she was in the habit of chewing gum, but as this gave her pain and seemed to irritate the little development, she concluded it was the cause of the trouble and abandoned its use, with the hope of getting relief. This caused a lessening of the irritation but not of the size of the tumor, which rather increased in size as time went on. Several months since she consulted her physician in regard to the trouble, who, after an examination, thought it due to a simple glandular enlargement and would subside with treatment. At this time there was considerable swelling and more or less pain all the time, which was aggravated during mastication. The treatment resorted to reduced the inflammation, rendering the condition more tolerable but the nodule continued to grow. As before stated she called to consult Dr. Savage, touching her condition about the middle of June, at which time an examination revealed the following:—

Patient complained of swelling in floor of mouth on right side, which was quite painful, causing difficulty during mastication and inconvenience during any attempt to talk. The sound of the voice indicated a fullness of the tissues of the mouth. Inspection revealed an enlargement in floor on right side, in position of sublingual gland. Palpation discovered a tumor which could be easily felt between the fingers, one inside the mouth, the other under the floor externally.

The tissues were much thickened, thus masking in a large measure the true condition, though there seemed to be a nucleus of greater density.

The position, history, and physical signs pointed to a calcareous deposit in the locality named, which was accordingly diagnosed, and the patient informed that an operation would be necessary to remove the concretion, to which she consented. The swelling being considerable, it was deemed advisable to attempt to reduce this, and a local application of Tr. Iodine was made externally for several days, when the condition was more favorable as to this symptom, and diagnosis was more certain,

which was confirmatory of the first conclusion reached in the case.

A 10 % solution of cocaine applied to the mucous membrane acted well, and with a scalpel a line of incision was made in the floor of mouth, over the duct of Bartholin. The point of the scalpel soon corroborated the diagnosis by grating upon the calculus. It required some dissection with scissors and manipulating with the finger to dislodge the body, which was quite rough upon its surface. The calculus is  $\frac{5}{8}$  of an inch long,  $\frac{5}{16}$  wide,  $\frac{1}{4}$  thick, rough upon its surface and shaped much like an almond. There has been no after trouble, and none is apprehended. This condition, according to Gross, is extremely rare, he having had only one. Others mention this condition, though but few have met with it.

The case is reported on account of the rarity of the condition, and again on account of the fact that a failure to diagnose and remove may be the cause of considerable discomfort to the patient.

In diagnosing such cases, it would be admissable and expedient to resort to a sharp pointed probe or needle, for the purpose of discovering a suspected calculus, which would prove a positive means of arriving at a conclusion where there was any doubt in the case.

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#### EXTRACT.

Dr. G. I. Cullen, in the May number of the Cincinnati Medical Journal, gives an interesting article on the "Treatment of Hypertrophied Tonsils by means of Ignipuncture," the features of which are presented to our readers.

"The galvano-cautery possesses the power of filling a double vocation, that of completely dissecting the tonsil and that of merely reducing it in size by the cicatrization of the tissue of which it is composed."

Cocaine, a 4% to 10% solution to which phenol has been added, which lessens its constitutional and increases its anæ-

thetic effect, is applied. Then with an electrode, which will upon slight pressure enter the crypt, two or three punctures are made according to the condition of the tonsil, and the patient is dismissed for three to six days. The treatment in the meantime consisting of a soothing anti-septic wash of menthol, resorcine, or a modification of Dobell's Solution.

In those rare cases of after hemorrhage from this procedure he prescribes tannic acid 2 parts, gallic acid 1 part, with sufficient water added to bring it to the consistency of thick cream, and orders the patient to take a sip of this, which has in his experience invariably checked the hemorrhage at once.

"The degree of heat used is that of a moderate red, the knife being allowed neither to cool to a black heat before its removal from tissue, as pain and hemorrhage will result, nor to attain anything like a white heat, as in that case the pain will be more severe and the danger of injuring surrounding tissue greater."

The indications for this method of treatment he gives as the following;

"1. When tonsils have ceased to perform their function by reason of interstitial thickening and occlusion of the lacunæ of the glands, in which condition the mouths of the crypts becoming blocked with the accumulation of sebaceous matter, which rapidly decomposes, they form an excellent culture medium for various pathogenic germs, which may ultimately be absorbed into the lymphatic system.

"2 That when a tonsil shows itself competent at short intervals to become inflamed and give rise to peritonsillar abscess.

"3. Where the tonsil is so situated that it is a matter of great difficulty as well as danger to use the tonsilotome, and from extensive adhesion of the pillars, likely to cause severe hemorrhage by their being cut.

"4. In all cases where the patient is of hemorrhagic diathesis, or in other cases in which alarming hemorrhage is feared.

"5. When patients will not consent to the use of the knife and yet the demand for the removal of the gland is imperative."

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## SYMPATHETIC OPHTHALMITIS.

Written for the Ophthalmic Record by

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PHILADELPHIA, PA.

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This dreaded disease, the bane of ophthalmic surgery, is always looked upon with awe and trembling by every ophthalmic surgeon, and any new line of treatment is welcomed, especially if that treatment coupled with experience proves its value.

This subject at present is being discussed by our French confreres and it is my purport in giving their views that this article is written. Drs. DeWecker and Abadie recently gave their experience as well as their treatment before the Ophthalmic Society of Paris. \*

DeWecker at the head of one body of men practices resection of the optic nerve as a prophylaxis. His confrere, Abadie, advises injections of corrosive sublimate, and when this fails, enucleation. From the tenor of these discussions it is evident that more data are necessary before the ophthalmic world can select one law to the exclusion of the other.

There is no doubt that if resection can be proven as safe a measure in preventing sympathetic ophthalmia it is much to be preferred.

\* Annales D'Oculistique. Mars-Avril 1891.



At the October meeting of the *Society D'Ophthalmologie*, † of Paris, the question of resection of the optic nerve was discussed, especially by Drs. DeWecker, Chauvel, Gillet de Grandmont and others. Dr. DeWecker spoke as follows:

"I propose to continue the campaign I have undertaken against the abuse of enucleation, and I firmly believe that by making more popular the simple resection of the optic nerve in cases where we have danger of migratory ophthalmia, no more eyes will be taken out, except when they are the seat of a neoplasm (tumors).

"If the transmission of migratory ophthalmia by the optic nerve is confirmed (and I am convinced of it), the simple resection of the nerve will afford a sure means of preventing it. Boucheron and Schoeler's method, which includes cutting the ciliary nerves, does not, however, answer the purpose. The only way to prove conclusively that resection of the optic nerve can take the place of enucleation is that a large number of resections shall be made and the results noted. The operation must also be made as simple as the operation for enucleation. If we were to follow the complicated operations as described by Schweigger or Pagenstecher it would certainly never become popular."

As to recent injuries in the "danger zone" of the eye, I shall give Dr. DeWecker's views when twitted by Dr. Abadie.

Dr. Abadie, ‡ at a subsequent meeting said: "I recently brought before this society several patients who had been treated by ocular injections of corrosive sublimate, which were permanently cured, and since then I have cited analagous cases gathered from other sources.

"Since my method has been made public it is interesting to record the experience of others who have applied this method of treatment. M. Valude has brought before us two cases of sympathetic ophthalmia, in which he made the intraocular injections, but failed to arrest the morbid processes and he was obliged to enucleate the eye-balls.

† *Recueil D'Ophthalmologie*. October, 1890.

‡ *Annales D'Oculistique*, Mars-Avril, 1891.

"In a question so delicate and complex as that before us to-day, and to prevent falling into error, the special indications must be given, otherwise one would come to false conclusions. When I inaugurated my first line of treatment, it was to fight sympathetic ophthalmia at its earliest stage, and in which the injured eye, in spite of the infection, had still some chance of being saved.

"In M. Valude's cases I argue, on the other hand, that he irritated an old injury in eyes which were entirely disorganized and had been so for a long time. In such cases I would have enucleated; for I have recently performed two enucleations under similar conditions. Even when by repeated intraocular injections I am able to arrest sympathetic ophthalmia, if I find a painful stump, without light perception, and which can only be a source of torment to the patient, I do not hesitate to remove it. I do not pretend to say that the injection of corrosive sublimate in such a stump is of no importance, one may thereby prevent sympathetic ophthalmia. I feel bound to say that one should not give up hope in an eye threatened with sympathetic ophthalmia, even when the disorganization is far advanced. Instead of an immediate sacrifice, intraocular injections of corrosive sublimate should be made. Such cases have succeeded, the facts are undeniable; all the members of the Society know this.

"M. Galezowski has spoken of a patient who was not cured in spite of the intraocular injections. The details of this case are such that it is impossible to discuss it without profit, knowing that facts speak stronger than theories. I bring before the meeting two other patients, the histories of whom are very instructive. The one is a young man 23 years of age who three weeks after the right eye was wounded, developed sympathetic ophthalmia. The physician in charge of this case enucleated the injured eye five days after the beginning of the sympathetic trouble. In spite of this enucleation, the condition of the other eye grew worse, a resection of the stump of the optic nerve was then performed, but in vain, the patient is blind. One such example suffices to absolutely repudiate the resection of the optic nerve, even when recommended by so able a man

as Dr. DeWecker; theoretically even, it is unsatisfactory and I do not know a single clinical case which pleads in its favor.

Dr. DeWecker's § answer to this is as follows: "In discussing the different cases in which the practitioner may have before him an injured eye threatened with inflammation (transmission), or even when the latter is an accomplished fact, I think I sufficiently indicated that when I recommended a procedure of my own I did not mean to adapt it to every ordinary case. I therefore specified very plainly the cases in which its application seemed to me really advisable. Thus, referring to the fifth category, I said, 'Heretofore we have only dealt with the preventive means against sympathetic ophthalmia. How ought we to proceed when an eye having lost its sight, has brought on this terrible affection?' I here recommend at once the enucleation, but I also add that for the last eight years I have in such cases destroyed as far as possible the part of the nerve left in the orbit, whenever the simple enucleation proved ineffectual, and injected daily into the cavity a solution of sublimate (1—2000), by means of a canula, that is to say, I made a daily irrigation of the denuded end of the optic nerve, as long as the cicatrization did not oppose these washings. I say further, the result of this interference has been very favorable and may be recommended to those colleagues who still resort to enucleation. I repeat again, 'A second method would be to proceed to make a simple resection of the optic nerve, and especially to insist upon the continued irrigation of the orbital end of the nerve with a stronger solution of sublimate (1 to 1000 or 1 to 500).'

"The conditional manner in which I here recommend the resection, giving the first place to enucleation, followed, in case it proves ineffectual, by resection of the stump, with a repeated irrigation of the optic nerve is, it seems to me sufficiently plain, and whoever is willing to understand, will recognize that in such cases I resort to the resection of the optic nerve only when a positive obstacle forbids the enucleation, and if unnecessary, to the ablation of the stump. But, although I only speak conditionally of the resection of the optic nerve, *I very particu-*

*larly insist upon the continued irrigation of the orbital end of the optic nerve.*

"Precisely what compels me to place the enucleation before the simple resection is the fact that the repeated irrigations are hardly practicable when the globe is preserved. I insist, however, above all upon disinfection after the resection.

"In view of the above I do not think I deserve the lecture which my friend, Abadie, has just given me— \* \* \* \*

"Let no one suppose that because I have entered, and rightly, I think, into a campaign against the abuse of the operation of enucleation, I hesitate a moment to perform it when a case is presented to me of migratory ophthalmia, owing to the loss of vision in one eye by a wound, in order to save the other eye. In such cases I not only perform the enucleation but proceed also to apply long continued and repeated irrigations after the resection of the stump, and at the same time subject the patient to a vigorous treatment of mercurials, injections of pilocarpine, etc."

Dr. Abadie continues: "Here is another patient who came to me twenty days after the right eye had been injured, in the ciliary region. In spite of an immediate antiseptic treatment, the sight of this eye grew worse ever since the accident. The left eye was almost useless since infancy, by reason of atrophic choroiditis. His condition rapidly growing worse, in spite of every care, he concluded to consult other ophthalmologists and when I again saw him he was lead about as a blind man. He had only quantitative preception of light in the right eye which eye had been the seat of infectious irido-choroiditis.

"I applied the galvano-cautery to the ciliary region (wound), and injected under the conjunctiva one drop of sublimate (1 to 1000). A great improvement followed immediately, and at end of three weeks he counted fingers several metres distant; after this, little by little vision diminished to simple quantitative perception of light, same as before my first treatment. I again cauterized the wound (place), and repeated the injection of sublimate. This patient, who is before us, is cured and able to return to his work.

“The history of this last case presents several points of the greatest interest, and which are worthy of notice. First and foremost, here is an individual who has suddenly lost his good eye. The other one blinded by reason of extensive lesions of the deeper coats. He is wounded in the good eye: the place is infected, an infective irido-choroiditis develops. In this absolutely desperate case, I am bound to obtain a cure without enucleation or running any risk, and I fell back upon the galvano-cautery and the injections of sublimate. I may here remark that after the first cauterization and injection, having given place to a great improvement, which almost approaches a cure, a serious relapse follows, and I am convinced that if at this time the patient had deserted me, he would have become blind. But he had confidence, and on my part I did not hesitate to repeat the treatment with renewed energy, and the final result has been complete success. It is necessary to emphasize the facts, for it is possible that the non-successes of which we have spoken, are those of patients, who, not being cured by the first injection become discouraged, as well as the surgeons who have them in charge. A little perseverance on both sides may be all that is required to bring about a cure.

“This example shows that the question of sympathetic ophthalmia is intimately allied to traumatic ophthalmia. When an eye is damaged, it may follow the nature of an infectious agent, become the seat of an abscess, or be lost by irido-choroiditis, or degenerate into atrophy. Finally, the infection gradually developing, may become sympathetic ophthalmia.

“The cauterization of the wound by the galvano-cautery, made in time, is the only means to stop the suppuration. In traumatic ophthalmia (infectious irido-choroiditis), the cauterization of the wound and the intraocular injections may save the ocular globe and prevent sympathetic ophthalmia, even in the presence of a sympathetic ophthalmia of recent date, when the wounded eye is not irredeemably lost. If, in spite of this repeated treatment however, sympathetic ophthalmia is not stopped, one must enucleate.”

My apology for giving such a lengthy review of these discus-



sions, is that more points of interest are brought out, than one could give in a brief abstract. It is a subject of grave importance, and if any new thought is suggested to my readers by my translation, I am pleased. I have tried to conform to the views of Drs. DeWecker and Abadie as near as possible. Both discussions were exceedingly lengthy, and more worthy of a better reviewer. In a future article, I shall deal more pertinently with the indications for resection of the optic nerve, galvanocautery and injections of corrosive sublimate, for the prevention of sympathetic ophthalmia.

1304 WALNUT ST.

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## RECENT VIEWS ON THE PATHOLOGY OF TRACHOMA.

Written for the Ophthalmic Record by

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Ophthalmic and Aural Surgeon to Providence, Garfield and the Children's  
Hospitals, and Director of the Eye and Ear Clinic of the Central Dispensary,  
WASHINGTON, D. C.

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A most important point in the study of trachoma is the determination as to whether or not it is a purely local affection and contagious. Up to within the last ten or fifteen years there was but little doubt in the minds of most clinicians that it was both. Von Arlt considered it as a succedaneum of gonorrhoeal ophthalmia. Recent studies in histology, however, and a broader view of its clinical history would seem to warrant a doubt whether we can consider it either essentially. Of course the first important thing in clearing away the ground is an accurate diagnosis—a clear differentiation between follicular conjunctivitis and genuine trachoma. In the earlier stages of both the diagnosis is by no means easy clinically, there being the same granulated appearance in each and the same subjective symptoms. A thorough and earnest discussion has been carried on for a

long time among the microscopists as to the histological condition in the two affections with the final result that it is now accepted, I think, that they are entirely distinct.

The latest resumé of all that has been written on the subject is contained in a very able paper in the "*Annali di Ottalmologia*," Anno 19, Fasc. 5 & 6, 1891, by Dr. G. Moauro, entitled "*Contribuzione all' Anatomia Pathologica delle Congiuntivite Folliculare e del Tracoma*." The paper contains also the results of original research carried on in the ophthalmic clinic of Prof. Di Vincentiis, of Naples. As the original is probably not within the reach of most of the readers of the "*Record*"—Italian ophthalmology not yet having become popularized among us—I will give the conclusion at which he arrives, after a thorough study of the subject in all its bearings.

"1. From an anatomical point of view there are two forms of disease, follicular conjunctivitis and trachoma. The first is characterized by lymphatic follicles, the latter by trachomatous nodules.

"2. The trachomatous nodules are to be classed with granulation tumors.

"3. The trachomatous nodules originate in a proliferation of the fixed cells of the connective tissue and vascular walls.

"4. Towards the end of the first stage of the formation of the nodules there is a participation of the epithelium of the conjunctiva and the adjacent glands manifesting itself by signs of proliferation.

"5. The reparative process in the connective tissue takes place by the transformation of the newly formed epithelial cells.

"6. The giant cells of trachoma are found under two forms; initial and evolutionary, and retrogressive."

He regards the development of the lymph follicles in follicular conjunctivitis as an increase in the quantity of a normal tissue, while trachoma is a new formation entirely.

In the transactions of the Oph. Soc. of the United Kingdom for 1890, v. 10, Dr. J. Ried of Glasgow, publishes some excellent plates showing the changes found in the conjunctiva in the two forms of disease. He thinks it probable that there is lymphoid

infiltration in all forms of conjunctival inflammation and it is, of course, also found in the earlier stages of trachoma, but the difference in the histological appearance of the two in the later stages is most pronounced and of the character described by Moauro. These histological views are supported clinically by the distinguishing fact that in papillary conjunctivitis, however long the inflammation may be continued it does not end in a destruction of the conjunctival tissue, while in trachoma it invariably does. Whenever the trachomatous nodule disappears it destroys the tissue in which it is embedded and its place is taken by cicatricial tissue. So much for the pathological anatomy. There may be a microbe which is characteristic of trachoma and Sattler and Michel claim to have found it—a diplococcus somewhat smaller than the gonococcus—and we have ourselves seen such a coccus in the secretion from a case of genuine trachoma, but its presence has not been established with sufficient constancy to enable us to assert with positiveness that it is the producing cause or is connected etiologically with trachoma in any way. The very fact that the contagiousness of trachoma is disputed is an indication that something more is needed for its development than the presence of its specific germ, if it have one.

The highly contagious nature of trachoma is an idea which had its origin in the time when all forms of granulated lids were classed as trachoma. But in the chronic form, which is the form which true trachoma almost invariably assumes, we have but little evidence of its contagiousness. One member of a family may have it for years and live in the closest intimacy with the others and yet remain the only one affected. Chibret,\* says that in seventeen thousand eye patients he has seen two cases of trachoma in the same family, a mother and daughter, at the same time, but once. If it were a purely local and contagious disease this could not be. In fact, the more we study into the histological anatomy and the more closely we draw the lines of differential diagnosis between papillary conjunctivitis and trachoma the more we become impressed that trachoma is

\* *Ann. d'Oculistique*, Jan.—Feb. 1891.

the manifestation of a dyscrasia and that for its development there must be a predisposing as well as an exciting cause.

Of late years attention has been directed to that feature in several quarters and in several different ways. It has been discovered, for instance, that an elevation of one thousand feet above the sea level gives an almost complete immunity from the disease. This immunity, however, is not complete, for I have myself seen the disease at from twelve to fifteen hundred feet, and Prof. Kober has assured me that he has seen it among the Indians of California at 4700 feet. The question was very thoroughly discussed at the last International congress in Berlin, and in a paper I read on that occasion † I again called attention to the fact first brought to prominence in a paper which I read before the International Ophthalmological Congress in New York in 1876, that the negro in this country seems to be almost entirely free from the disease. We, of course, hear of negroes who are said to have trachoma, but then there is always the question as to whether the observer has made a clear distinction between that affection and follicular conjunctivitis. In the majority of cases I do not believe such a distinction can be made by simple inspection until the cicatricial stage of trachoma has set in. I have myself seen cases in the negro where the clinical aspects were such as we have in genuine trachoma but I have not yet seen, in a clinical service composed largely of negroes, during the last fifteen years, a single case of entropion due to cicatricial contraction of the conjunctiva of the lid. Yet these negroes lived for the most part in crowded quarters and among the most unhygienic surroundings. They are greatly predisposed to scrofula and tubercles and are as subject to purulent and mucopurulent conjunctivitis as the whites. Dr. Chibret of France, in a paper read at the Berlin Congress and published in the *Ann. d'Oculistique*, Jan.-Feb. 1881, also called attention to racial influence in the causation of trachoma, and instanced the celtic race in Europe as an example of immunity. He tries to account, in some measure at least, for the freedom from the disease given by the higher elevations, by the fact that these

† Afterwards republished in the *Medical News*, Nov. 22, 1890.

high places were originally settled by the Celts. That may be the case with the Celts in Europe but it certainly cannot be said of the Celts in Great Britain, for it is well known that the Irish suffer more from the disease than any other people, probably, except the Belgians. And yet it is not impossible that the Celt after he got to the British Isles developed a predisposition to the deposit of the trachoma nodule, and it may be too, that, in time, the negro in America may cultivate a susceptibility to trachoma just as he is now very rapidly developing myopia.

Dr. Chibret quotes Dr. Sulze as saying that during an ophthalmic practice of seven years in Java, amongst Negroes, Chinese, and Javanese he found the negroes to enjoy a much greater immunity from trachoma than the other races. It yet remains true in this country at least that your surest way of avoiding trachoma is to be a negro.

The points then, in favor of an essential dyscrasia underlying trachoma are : first, the fact that certain races have an immunity from the disease ; second, that its development is impeded at altitudes greater than one thousand feet ; third, that it is not purely contagious like, for instance, ordinary blennorrhoea of the conjunctiva. In regard to this latter proposition it should be said that undoubtedly an attack of conjunctival inflammation of any kind would be likely to develop the trachoma nodule in any one predisposed to it and that, on the other hand, a discharge from the conjunctiva of a trachomatous eye may excite an inflammation that is not trachomatous in another eye. The lack of a clear sifting out of facts and possibilities has thus laid in the way of a proper appreciation of the true relation of trachoma to contagiousness. What the exact nature of this dyscrasia is we do not yet know but it is a fair assumption that enfeebled vital powers play an important part in its development.

The therapeutics of trachoma have never been attentively studied from this point of view of its pathology, but the time has now come when, in the treatment of this serious disease, we must think of something beside the local application of caustics and astringents. Residence at a high altitude should certainly be enforced when possible, and attention given to improvement in general nutrition.



IODIDE OF SILVER IN THE TREATMENT  
OF TRACHOMA.

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Written for the Ophthalmic Record by  
R. C. HODGES, M. D.,  
GALVESTON, TEXAS.

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Probably no class of diseases of the eye has enlisted the use of a wider or more varied array of remedies, than cronic disease of the Conjunctiva, with their various complications. To a naturally timid man, the courage necessary to advance the claim of a successful remedy, in these cases, must be born of an indisputable experience, facts clear and demonstratable, and sufficient in number to be of value as statistics, and last, results covering a period of time sufficient to justify the claim of a cure.

From an experience of three years, with nearly every form of this disease, found in this part of the South, with cases from every class of society, complicated with every variety of corneal lesion, and with hygienic conditions good, bad and indifferent, I have acquired results which afford me sufficient courage to venture into print on this time honored subject, the "bete noir" of every oculist.

Three years ago, experimenting with various solutions with which to neutralize the stronger solutions of nitrate of silver used in chronic trachoma, I tried a solution of potass. iodide in glycerine. After making an application of arg. nitrate to the everted lids, in a very ugly case of chronic trachoma, I applied the iodide solution sparingly to the surface. The resulting precipitate of iodide of silver clung so closely to the granular surface, and the patient experinced so little pain as compared with previous applications of the arg. nit. that I could not but attribute the result to the iodide of silver, and determined to try the direct application of arg. iodide, and note its effects.

The result in this particular case was so satisfactory to patient

and myself, that I continued its use, and in one week's time, the improvement was so marked as to lead me to use argent. iodide in all cases of trachoma. After considerable experimenting to ascertain the best solution of arg. nit. and potass. iodide to use, and which would give best results, be easiest to apply, and cause the least reaction of pain, I decided on the solutions which I give below.

Argent. Nit., ʒi.	Potass. Iodidi., ʒii.
Glycerinae, ʒii.	Glycerinae, ʒiv.
Aquae, ʒi.	Aquae, ʒii.
M. Sig. Sol. No. 1.	M. Sig. Sol. No. 2.

This gives a yellow precipitate of Arg. Iod., of a creamy consistency and a sufficient amount to use in a half dozen cases. More can be prepared at a time, but the fresher the precipitate, the better the result. On a watch crystal pour one part, say 5 to 10 drops of solution No. 1, and add ten to twenty drops of No. 2, mix. Apply to the everted lids with a cotton swab once a day. During the three years since I first tried it, I have used no other remedy, and where I have had the opportunity to do this regularly and systematically, the results have been perfectly satisfactory, and where I found the use of arg. nit., cupri sulph., lapis, scraping, pinching and other methods to require from six to eighteen months to effect a cure, and in many cases fail utterly, this remedy has done the good work I claim for it, in from six to twelve, and in only a few cases, eighteen weeks. Cases complicated with every variety of corneal lesion, and many with the iritic complications, have improved so rapidly under this remedy, as to lead me almost to believe it a specific for all chronic diseases of conjunctiva. This is too broad a claim however, as here and there are cases beyond our skill, but I have a larger percentage of cures than by any other method, fewer disappointments, my patients suffer little or no pain, there is *no destructive action* and *no ugly deforming cicatrices* of conjunctiva following its use, however prolonged. As in the treatment of any other chronic disease, I give special attention to the general health of my patients, employing tonics, nourishing diet, and so forth, to assist the result desired.

At the recent meetings of the State Medical Society, I reported a number of cases of the worst and most chronic forms of trachoma, treated and relieved by Iodide of Silver, cases now under observation for from six months to two years, and I have many more to add to this list. The remedy is a simple one, and easily applied, and the pain, lachrymation and photophobia disappear in a very few minutes. My medical friends in the North tell me they do not have many cases of this class in private practice. Here in the extreme South, they are very common among all classes. The results I have obtained have led me to discard all the time honored remedies, and to rely on this alone. I do not expect others to do so, until they have given it a thorough trial, but I can assure them, that used regularly and properly, it will not disappoint them. I shall be pleased to hear of any results that confirm or disprove my belief in this remedy, and to defend my claims by cases from my own practice.

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### SYPHILITIC IRITIS—SOME STATISTICS.

Written for the Ophthalmic Record by  
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ATLANTA, GA.

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There are few works on Ophthalmology which do not devote some space to a description of syphilitic iritis, though the space occupied by such a dissertation is often very meagre. Dr. Noyes in his late excellent work devotes but a few sentences to the subject but the same author has furnished an excellent article in Dr. Keyes last work on Genito-Urinary diseases. There is no reason why this subject should be classed as a distinct entity, for as far as its local manifestations and symptoms are concerned it differs but little from the other forms of iritis. I do not propose to add any new features to the morbid anatomy or

pathological condition of this disease but simply to give to the readers of this article some points which are not often dwelt upon in text books, and which I myself have of late had an opportunity to observe. During the last six weeks of my residence as House Surgeon of the Ophthalmic wards in Charity Hospital, N. Y., I had an opportunity of gathering some statistics mainly for my own benefit, but thinking perhaps that they would be of some interest to others, I concluded to embody them in a short article. The greater the number of cases one has to draw from, the more valuable will be such a statistical report. My observations were taken in order to ascertain what percentage of patients admitted into the hospital with syphilis had syphilitic iritis. During a period of six weeks one cannot expect to have as large a number as might be desired from a statistical point of view, yet the number was sufficient to give a general idea of the points desired. This disease like all others seems to have its periods of exacerbation and decline, so far as frequency is concerned, and it almost seems—and did seem to me—as if the six weeks chosen for noting the disease was a period belonging to the former category. It is said that, “sorrows never come singly” and so it is that cases of specific iritis seemed to come bunched. In my hospital experience, I have noted this seeming periodic increase in all diseases, especially eye troubles. This latter statement was especially exemplified in a series of gonorrhoeal ophthalmias which occurred during my hospital service.

From Feb. 15th to April 1st, there were in the venereal wards of Charity Hospital, 61 patients with syphilis of every stage. Of this number 14 had inflammation of the iris, five females and nine males. A brief history of each case will be given, from which certain points will be noticed to be deduced hereafter. The complete history of one or two of the cases I was unable to obtain, but the convalescence of each had already progressed so favorably as to make the main points assume a definite shape.

Case I. J. D., female, aet. 30, admitted into hospital Oct. 30. One week before entrance an eruption appeared upon her body. Like the majority of these cases, she gave no history of the

initial lesion. When admitted the patient had a general papular syphilide of the body, and one week later both eyes were affected with iritis. Active treatment was immediately instituted.

Feb 19th. All eruption has disappeared. Still some adhesions of both irides and particles of exudation may be seen on the lens capsule with the ophthalmoscope. Discharged.

Case II. J. M., female, act. 33, admitted to hospital Feb. 21. Patient entered with a well marked syphilide and genuine case of iritis. She had had both for one month, giving a history of their simultaneous appearance. Denied all history of a sore. patient was placed on both local and internal remedies. March 10th, marked improvement. April 1st, patient discharged.

Case III. E. R., female, act. 17, admitted Jan. 20. Has a papular syphilide on legs and arms with iritis of both eyes. Gives history of syphilis eight months previous. Active treatment instituted.

Feb. 26th, much improved, has one or two small ulcers on legs. Patient is undoubtedly of a scrofulous diathesis. Now has a single ulcer on both corneæ. These were dusted with powdered calomel Iodide of potash internally. Iris nearly normal.

March 20th, patient discharged at her own request with only a slight photophobia remaining.

Case IV. M. M., female, act. 40, admitted Feb. 25th. Two weeks before entrance patient said the left eye became sore, and one week later the right. Four years ago says she had a sore. Had no eruption until three weeks ago. Now has a papulo-squamous eruption and iritis of both eyes. Active treatment instituted.

March 23rd, patient discharged.

Case V. L. S., female, act. 38, admitted to hospital March 14th. History showed that the right eye commenced to be inflamed eight weeks ago and one week later the left became involved. Patient says she had an eruption seven months ago of which she was cured. By what means it is not known. Placed on combined local and internal treatment.

March 27th, marked improvement.



March 31st, patient is so much improved that she speaks of going out.

Case VI. D. N., male, aet. 28, admitted Feb. 2nd. His history shows him to have had a sore on his penis in May last. On Dec. 1st, spots appeared on his body and, on the 20th of Jan'y., both of his eyes began to be inflamed. On entrance he had a marked pustular eruption over the extremities and iritis of both eyes. Active treatment was instituted.

Feb. 17th, both eyes improving, especially the left.

March 22nd, irides appear normal, no adhesions. Still slight eruption.

Case VII. G. B., male, aet. 27, admitted into hospital in Oct. Six weeks after the initial lesion a pustular eruption was developed.

Nov. 12th, left eye began to be inflamed. Atropine has but little effect on the size of the pupil.

March 1st, right eye involved and left much improved. Still strong adhesions.

March 22nd, both eyes are improving but the irides are still bound down. Vision fair.

Case VIII. P. M., male, aet. 50, admitted Feb. 4th. In the middle of January last the patient had an eruption upon his body. Under treatment this disappeared and patient left the hospital. Re-entered the hospital on above date with a severe iritis of both eyes.

Feb. 20th, Iritis severe. Hot cloths to the eyes and leeches to the temples.

March 9th, patient's eyes are much improved.

March 22nd, with the exception of some photophobia his eyes are practically well. No adhesions.

Case IX. G. V., male, aet. 26, admitted to hospital Jan'y. 8th. In August of 1888 the patient had a sore upon his penis and in the following summer of 1889 an eruption appeared upon his body—papular from description. On admission the patient had severe iritis of both eyes. Combined treatment instituted.

Feb. 20th, both eyes much improved. The patient is decidedly cachectic and much run down physically.

March 1st, inflammation has subsided and there is only slight adhesions inferiorly.

March 22nd, iris normal. Patient is still weak.

Case X. C. O., male, act. 46, admitted to hospital Feb. 13th. Had a sore on his penis 3 years ago—said that he never had an eruption afterward. Had severe iritis of both eyes on entrance. Improved rapidly under combined local and internal treatment. Patient was discharged March 9th, at his own request. Slight adhesion remaining.

Case XI. C. T., male, act. 30, admitted to hospital March 2nd. Patient had a sore three years ago followed by an eruption. Comes in with marked iritis of left eye. Patient had been treated for a couple of months previously at the dispensary. Has now no syphilitic signs. Suffers greatly with rheumatism. Anti-rheumatic and anti-syphilitic treatment instituted.

March 22nd, much improved. March 30th, discharged.

Case XII. B. M., male, act. 39, admitted to hospital March 14. History of a sore five months previous, just as the sore healed his right eye became affected. On entrance there is a marked general pustular syphilide and very severe iritis of right eye. Treatment consisted in hot water and atropine locally, with mercury internally.

March 22nd, marked improvement.

March 30th, slight hyperæmia alone remaining.

Case XIII. Jno. F., male, act. 21, admitted to hospital March 21st. Following history gathered:—Patient had a sore last August but does not remember to have had an eruption following it. Now has superficial gummas on body, especially the face. Says in October last the right eye became inflamed and was cured in two weeks. Immediately afterward the left eye was injured which was treated with partially good results. Now comes in with a severe iritis of right eye. Severe choroiditis and separation of the retina following.

March 30th, syphilis, with previous bad hygienic surroundings, has well saturated his system. Only slight improvement noted.

Case XIV. E. A., male, act. 24, admitted to hospital Mch. 18. Had the initial lesion upon his penis the middle of September

last. Four weeks later he had a general eruption upon his body, and four months later his right eye became inflamed. Comes in with a severe iritis of that eye. Has a general papular syphilide. Combined treatment instituted.

March 3rd, patient fast improving.

These are the cases of whose history a record was taken and though there is nothing very startling in this presentation they will yet suggest some points of practical value. From this record it will be seen that the percentage of syphilitic subjects who have iritis is about 28. This percentage may be a little high and I think not a perfectly fair one, in that a definite period was taken when there was an unusual run of such cases. Noyes says that 50% of all cases of iritis are due to syphilis, while Mooren of Wiesbaden, states that out of 2068 cases of iritis only 169 were purely syphilitic. Of the fourteen cases reported, five were females and nine males, the ratio being about 1 : 1.75. It will be further noted that all of the cases were those of syphilis in the second stage and, with the exception of cases V and XI, the eruption of that stage was present upon the body at the commencement of the eye symptoms. As a usual rule it will be found that the iritis develops from two to three weeks after the eruption appears, though it is sometimes simultaneous with it, and again at later periods. Widder, in Graefes Archives Opth., Vol. xxvii, p. 99, says that specific affections of the eye are local manifestations of the constitutional syphilis; iritis is very common in the second stage, occurs in the early phase of syphilis and is a product of the condylomatous stage. Gummous iritis occurs in 19% of all cases of syphilis. Iritis in the tertiary stages is less common, usually manifesting itself by a gumma of the iris. I have seen one case where the iris was replaced by a perfectly white membrane, and whether the stroma of the iris proper was replaced by this new formation or whether the products of inflammation were transformed into a distinct membrane, it was impossible to decide. One feature noted in these observations was that the severer the eruption, the severer were the iritic symptoms. In the pustular syphilide the iritis was always severe. The treatment of the cases offers no new features. Atropine had always to be pushed more decidedly than in ordinary cases on account of the plastic form of specific iritis. Hot applications to the affected eye was an invaluable adjuvant and was the most efficient anodyne. Leeches of course were used in severe cases. Mercury and Iodide of Potash were administered.

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## THE MISSISSIPPI VALLEY OPHTHALMOLOGICAL SOCIETY.

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Shall such an organization have an existence? For several years this question is one that has often recurred to many Ophthalmic Surgeons, and about which some consultation has been had. The strange part is that the work of organization has not been pressed.

The agitation of this question is begun now at the suggestion of Dr. Young, of Iowa, after a conference with some of his Ophthalmic brethren in the North-west, all of whom are heartily in favor of the creation of the Society. Many others in this great valley will join them in the determination to organize. The possible objections to the proposed organization are two:—

1st. It may interfere with the Section of Ophthalmology of the American Medical Association.

2nd. Does not the American Ophthalmological Society cover all the territory of this vast country?

In answer to the first objection it may be truthfully said that the new society can have its time and place of meeting so arranged as to strengthen the Section of Ophthalmology of A. M. A. Its meetings should be held in the late fall, and the place of meeting should be different each year. There would be

drawn into the new organization many men who have never attended a meeting of the American Medical Association, and know but little of the grand work done by its Section of Ophthalmology. Developing in the new Society a love for public scientific investigation and discussion they would feel a desire to attend two such meetings annually, especially if the meetings are about six months apart. This double training would strengthen both the old and the new. Strong men would be developed by this double exercise. As is well known some of our best Ophthalmic speakers and writers are those who have labored in the American Medical Association and in the American Ophthalmological Society. The writer would be one of the slowest to lend his favor to an organization that would in any sense weaken the American Medical Association.

The second objection is not a very strong one. The American Ophthalmological Society is about grown as to numbers, its membership being limited possibly to one hundred, the greater part of whom reside in the East. Its place of meeting is always in the East. In name but not in fact it includes the entire country. In fact but not in name it includes only the East. It is true that some of its members live in the Mississippi Valley; but it is, at the same time, true that others, as good men and as earnest workers, living in this great Valley, have had their application for membership rejected. Personally the writer has no objection to the American Ophthalmological Society, but on the contrary wishes it to exist in perpetuity. It has done good and will continue to be useful. Notwithstanding she is a tender nurse, she has raised giants on whom we all look with admiration.

Let us have the Mississippi Valley Ophthalmological Society. There is room for it, and it can do a grand work. Let its doors be thrown wide open for the many or the few who may wish to enter, but let these doors be well guarded so as to prevent disreputable men from coming in.

Brethren of the Mississippi Valley, what say you to the question? When shall it be organized? Where?



DR. ROOSA'S VIEWS ON MUSCULAR ASTHENOPIA  
REVIEWED.

If error would always fall to the earth, so crushed by its own weight that it could never rise again, there would then be no need for reviewing Dr. Roosa's views on Muscular Asthenopia, as published in the *Ophthalmic Review*, October, 1890. Enough truth is amalgamated with error in this paper to make the mixture acceptable to many, especially to those who are just entering Ophthalmic practice. The paper to be reviewed was read by at least one young man whose endorsement was written at the end of the paper as follows: "Amen! to every word written—the best thing on the subject I have ever seen. 'Them's my sentiments out and out.'" Let us examine and see just what this young man—possibly many other men, some young, some old—has endorsed. In one place we read:\* "Insufficiency of ocular muscles is usually, if not always, a consequence of organic conditions in the eye-ball; that is to say, of myopia, hypermetropia and astigmatism. Working exactly on the line of Donders' discoveries muscular asthenopia should be expurgated from ophthalmic nomenclature." Dr. Roosa means to say that errors of refraction *cause* heterophoria. The same cause, under the same circumstances, will always produce the same effect. If we examine one myopic patient and find that, while looking at a candle at a distance of 20 feet, there is exophoria (insufficiency of the internal rectus) we must, according to Dr. Roosa's statement, conclude that all myopes have exophoria for distance. Abundant accurate observation teaches that many myopes are orthophoric or esophoric for distance. Again, if investigation of a hypermetropic patient shows esophoria for distance and near, we must conclude that all hypermetropic patients have esophoria for all distances. No man who has had any experience in muscle tests can say this is true. Every oculist who has made careful tests knows that there are many hypermetropes with esophoria for distant, and exophoria for near, objects; other hypermetropes have exophoria

\* *Ophthalmic Review*, Vol. ix, No. 108, pp. 282 and 283.

for all distances. Hypermetropia as a causative agent can not be so variable in its effects. We therefore must conclude that hypermetropia does not cause either esophoria or exophoria.

Let us examine a hypermetrope for any "vertical tendency" he may have. The first one shows a left hyperphoria, and this settles the matter, according to Dr. Roosa's teachings—all hypermetropes must have left hyperphoria. The truth is, many hypermetropes have vertical orthorhopia to all intents and purposes, while some have right hyperphoria or left cataphoria. There is nothing clearer to my mind than this: Ametropia can no more cause heterophoria, than heterophoria can cause ametropia. The one is independent of the other as to its actual existence. Each is capable of producing asthenopia, and if both act together they must bring about a more intense asthenopic state. Ametropia unattended by heterophoria, or heterophoria unattended by ametropia, may not, and often does not, cause asthenopia. The two anomalies existing together in the same patient, are apt to bring on an asthenopic state: relieve either the one or the other, and the asthenopia either vanishes entirely or is greatly relieved. Even though such results follow in some cases (not in all), when the astigmatism, the myopia or the hypermetropia has been corrected, it is a strange process of reasoning that would lead us to correct the one error and wholly ignore the other—both are errors and are susceptible of correction, and should be corrected.

In the past, when I ignored heterophoric conditions and thought everybody a crank who talked tenotomies and prisms, it was my misfortune to have some asthenopic patients to whom only temporary relief came as a result of cylindrical and spherical lenses. Some of these were kind enough to hold on to me until I embraced the opportunity of correcting the muscular error as well as the focal, and thus completed the cure.

Since writing the above, one of my old patients, a bank official, has come into my office to complain that he still has trouble with his eyes, more or less severe and at longer or shorter intervals, notwithstanding he has been wearing constantly the glasses I prescribed for him four years ago. His

trouble, however, has not at any time been so great as before glasses were given. The glasses he has been wearing are:

for O. D. + 1.50 s.  $\ominus$  + .50 cyl. ax.  $110^{\circ}$ ;

for O. S. + 1.00 s.  $\ominus$  + 1.00 cyl. ax.  $75^{\circ}$ .

These lenses were centered because I then believed that whatever muscular error he might have would cut no figure after his ametropia had been corrected. By the double prism and rod tests (the latter the best of all), I find he has  $2^{\circ}$  of exophoria in each eye, and  $1^{\circ}$  of right hyperphoria. These conditions I shall at once correct by rendering his lenses prismatic by decentering; and I shall expect relief such as has followed in other cases.

In another place† Dr. Roosa says: "After years of unsatisfactory work in this department of so-called muscular asthenopia, certainty appeared where formerly was doubt. The use of prisms had always been unsatisfactory in my practice. \* \* \* Now I have replaced them with cylindric glasses." The doctor's unsatisfactory experience with prisms must have been due to one of three causes (or to any two combined), viz., erroneous testing, or the prescribing of prisms too strong, or in using prisms when partial tenotomies should have been made. If he resorted to the strength test it is not astonishing that he found the results varying from day to day and that he was unable to give a prism that would do good. If he followed the plan of lateral displacement in testing for vertical heterophoria, and vertical displacement in testing for esophoria and exophoria, and gave the full correction, his patient could not for a long while, if ever, be comfortable wearing these prisms. That he made errors in practice is evident from his condemnation of a principle.

Finally, in the last part of his paper, ‡ he says: "Setting sentiment and preconception to one side, let us examine asthenopia in the light of Donders' work on hypermetropia and that of Javal upon astigmatism, and we shall have no occasion to look to insufficiencies of muscles as faults needing correction, except when they cause deformity or destroy binocular vision,

† Ophthalmic Review, Vol. ix (No. 108), 284.

‡ Ophthalmic Review, Vol. ix, (No. 108), p. 286.

when, if possible, they are to be remedied by operations, or gymnastic exercises." Why not investigate asthenopia in *all* lights? Donders was a brilliant man; Javal has done a grand work; but the thoughts of other original workers are worthy of consideration.

His own language as above quoted shows that Dr. Roosa believes and teaches that there is no state of the muscles worthy of consideration between orthophoria and strabismus. One can as philosophically say that there is no period of time between noon and midnight worthy to be thought of; or that there is no condition of temperature worthy of consideration between the extremes of heat and cold.

There is one point in the Doctor's paper with which I must agree, viz: "To admit that he [Graefe] said the last word on any subject in Ophthalmology is to confess that the whole science is at a standstill." I will only add that the "last word" has not been said yet, nor will it be said for ages to come. In the mean time the science of Ophthalmology will march grandly on.

## Department of Otology, Laryngology and Rhinology.

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GEO. H. PRICE, M. D., EDITOR, 621½ Church Street,  
NASHVILLE, TENN.

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### WHEAT IN THE EAR.

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In March of this year Miss E. L., came to consult concerning one of her ears, which had been giving trouble at times for several years. She had recurrent attacks of pain, no discharge, some deafness, more pronounced at times when pain was troubling her. Investigation discovered impacted cerumen, lowered hearing as compared with other ear, tenderness to pressure in canal and upon the plug of cerumen. Gave instructions for softening the deposit and made an appointment for the third day to remove the same. At the appointed time, I began the removal with the syringe and warm water, and succeeded in removing the mass except a portion which in contact with the membrane in the lower posterior portion seemed disposed to adhere. Any use of instruments at all, gave much pain, but helped to loosen this mass, which to the touch was very hard, and with the syringe I washed out. When it came away I was surprised to discover two grains of wheat. The patient could give no account of having been where the grain was in bulk, or small quantities. The membrane was red and sensitive. The canal was also quite tender. The wheat was swollen and of dark brown color. Some two or three weeks ago, an aunt of the patient came to the office for treatment and I enquired about this matter. She informed me that when the patient herein



mentioned was 5 or 6 years old she had played about where they were thrashing wheat and on the straw pile, but had not heard her complain of her ear until of late years. The patient is now 15 or 16, this would place the time when the foreign body was deposited in the canal, some ten years ago. Since the removal she has had no more trouble, the hearing being about same as in other ear.

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### TUBERCULAR LARYNGITIS.

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It had been hoped, by those who were sanguine, that the methods introduced recently for the relief of tuberculosis in all of its manifestations, would prove more beneficial than the present indications warrant. But those who have hoped, will continue to indulge in this species of possibilities and that too not without the promise of a realization, in part at least, of their hopes. The recent developments in the treatment of tubercular laryngitis, have left many in doubt as to the advisability of instituting those methods which gave most promise for a time. In all probability anxiety on the part of some has caused them to resort to methods which were illy adapted to the cases in hand and hence the results have been in some instances far from satisfactory. Koch's lymph has been extensively used with varying results. This is due in the main to a desire, both on the part of patient and physician in charge, to reach the desired end in the shortest space of time, and hence the treatment has been applied in some cases seemingly against the better judgment of the physician, but at the earnest solicitation of the patient, who being informed on the subject, was willing to assume the risk for the benefit of the doubt. It is somewhat remarkable that in the hands of some, this method has given such wonderful results while with others it has been found of little value, except as an agent for establishing the fact of tuberculosis, which being established beyond a doubt was soon as far beyond control. From the present indications it must

be acknowledged that Koch's lymph possesses possibilities of rare value, but that a more thorough study of its application will be necessary before it can be made altogether available. Like all other powerful agents its limitations must be definitely determined.

Liebreich's treatment of Laryngeal Phthisis, or the subcutaneous injection of the cantharidinate of soda or potash, is now undergoing the test incident to such discoveries, and experiments with this remedy are of such an encouraging nature as to elicit the interest of many investigators. The results reported are so flattering that it inclines us to the opinion that unless due caution is observed in the selection of cases, and use of the remedy that a reaction may set in which will discourage rather than promote investigation with this promising method. These methods being still on trial we will watch them and report from time to time.

If any of our friends are experimenting with either of these methods, we shall be glad to have reports of cases.

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## THE SURGICAL TREATMENT OF TUBERCULAR LARYNGITIS.

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Written for the Ophthalmic Record by

D. BRYSON DELEVAN, M. D., NEW YORK.

Professor of Laryngology, N. Y. Polyclinic. Consulting Laryngologist,  
N. Y. Cancer Hospital, etc.

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While to our knowledge of the pathology of tubercular laryngitis, comparatively little has lately been added, we are able at the present time, to record distinct advances in the department of treatment. Indeed, suggestions of such decided value have recently been made in this connection, that the prognosis has begun to lose some measure, at least, of its hopelessness, and the promise of better things to be suggested.

It is to these recent advances in the treatment of tubercular laryngitis, that attention is called in this paper.

In the first place, two distinct forms of laryngeal ulcer must be recognized as being associated with phthisis; first, the catarrhal form, which under appropriate treatment has often heretofore been healed; and secondly, the true tubercular infiltration and ulceration, which has run a steadily unfavorable course, and which has not been amenable to the recognized means of cure.

In the treatment of cases of the first class, proper hygienic surroundings, attention to constitutional needs, and local treatment of the larynx will, in a large number of instances, effect a cure.

The local measures most suitable for such cases, are rest to the larynx, avoidance of all sources of local irritation, and the application to the larynx at frequent intervals, of cleansing solutions, followed by mild astringents, and by insufflations of iodoform, or iodol, the larynx first being anæsthetized by a weak solution of cocaine, or, as is better in some cases, a small quantity of morphine having been added to the powder used for insufflation.

In the other cases, namely, those in which the disease was not catarrhal, but acutely tuberculous, the condition is far more serious. Almost invariably, the history of such a case is one of gradual deterioration, the condition becoming more and more distressing, in spite of all efforts to the contrary.

It is in the treatment of this class of cases, namely, the hitherto hopeless ones, that recent experiences have led us to hope for better results. In fact, this has been the outgrowth of the increase in our knowledge of the general subject of tuberculosis; for, since the time when mild topical treatment of the larynx, pencilling it with nitrate of silver, and the application to the tuberculous ulcers of iodoform were first suggested, great advances have been made in our knowledge of the true character of tuberculosis in general, and of its successful management in other parts of the body. The presence of a specific germ has been demonstrated, the value of the treatment of tuberculous joints and surfaces has been abundantly proved, and the suc-

cessful results of those ideas have clearly suggested their adoption in the treatment of lesions in localities to which they have not hitherto been applied.

Recognizing the broad, general principles which today govern the management of all tubercular disease, it is not difficult for us to realize the possibilities of a new departure in the treatment of tubercular laryngitis, and to listen with respect to the proposition, that, in the treatment of this disease, therapeutic measures, pure and simple, should give way to a method in which surgery shall play the active part.

The surgical treatment of tubercular laryngitis properly includes two varieties of operations; first, the extrinsic, including tracheotomy and extirpation of the larynx, and secondly, the intrinsic, or operations upon the soft parts of the interior of the larynx.

It is with the consideration of the second class of operations that we propose exclusively to deal, namely, with operations upon the soft tissues of the larynx.

With the consideration of the first variety, this paper has nothing whatever to do. Tracheotomy can be nothing more than palliative, while laryngectomy is, with our present knowledge of the operation and its bad results, too radical to challenge serious attention.

It is with the second, then, that we have exclusively to deal, namely, with intralaryngeal operations upon the soft tissues of the larynx. Of these, again, there are four varieties: 1. Incision of the œdematous tissue, after the manner of Moritz Schmidt and others. 2. Heryng's method, by the subcutaneous injection of lactic acid into the soft tissues of the larynx when in a state of œdema. 3. Scraping of the laryngeal ulcer, as practised by Dr. Heryng. 4. Actual excision of the œdematous tissue, together with scraping of the ulcers, as recommended by Professor Krause.

The first method, incision of the œdematous tissue, has not met with general approval, both on theoretical and on practical grounds. The second is exceedingly painful, and in the experience of the writer and others, has not yielded good results. We will confine ourselves therefore to the study of the third and

fourth, premising that their employment is a secondary matter adjuvant to a far more important element of treatment, namely, to the application of some agent which shall effectually destroy the last remnant of the tuberculous disease. Just as in other departments of surgery, both Professor Krause and Dr. Heryng work upon the theory that the diseased or infected tissue should first be as thoroughly as possible removed or scraped away, and the underlying parts then treated in such a manner that there can be no possibility of bacilli being left behind. For this purpose various agents have been used, such as menthol, iodoform, iodol, soziodol, pyoktanin, and others, with indifferent results. It is to Profssor Krause, mainly, that we owe our knowledge of the value of lactic acid in these cases. He has found that this chemical, properly diluted and thoroughly applied to the diseased tissues produces effects not to be attained by any other known agent, and that by its use brilliant results, considering the nature of the disease, may be gained. Dr. Heryng has also used the lactic acid treatment, applying it by first scraping a tuberculous ulcer with one of a series of small curettes which he has devised for the purpose, and then rubbing the acid well into the surface thus abraded.

Professor Krause, on the other hand, uses one or more of a set of double sharp spoon instruments, which he has made for the especial object of cutting away any portions of diseased tissue which in his judgment may require removal, applying, after the operation, the lactic acid to the denuded part. Like Heryng, he is also in the habit of scraping tuberculous ulcers.

To explain the operations more in detail, the larynx is first anæsthetized by means of cocaine. In Dr. Heryng's operation the surface of one or more ulcers is then thoroughly scraped with the sharp curette, and, bleeding having ceased, the lactic acid is applied. In Professor Krause's operation one of his double instruments, with sharp spoon extremities, is introduced into the anæsthetized larynx, and the operation completed by the forcible closing of the blades of the instrument upon the selected tissue, and its subsequent removal. Professor Krause does not confine himself to the ulcers, but removes bodily the œdematous tissue as well, operating, if necessary, upon cases in which



ulceration has not yet developed, and eradicating, as far as possible, all of the infiltrated tissue within reach. For the completion of the operation several sittings may be required.

The application of the lactic acid must be only thoroughly made. It is not enough that the surface of the ulcer or of the wound should be merely painted with it. Krause insists that it must be applied so intimately as actually to be incorporated with the parts under treatment, and directs that a pledget of cotton, wound upon a probe be saturated with it, and then forcibly rubbed upon the diseased surface, in order that the destruction of the bacilli may be assured.

The strength of the lactic acid solution must be varied to suit the given case. From twenty per cent. to fifty per cent. is usually well tolerated and is sufficient for the purpose. Indeed, Krause believes that the effect of the solutions mentioned above is as energetic as that of the pure acid, while decidedly less irritating in sensitive cases. Some patients, however, seem to suffer much more than others under it, and it may be necessary, in exceptional cases, to reduce the strength of the solution as low as ten per cent. As a rule, the acid is not as well tolerated by the larynx as it is by the pharynx. Careful rubbing of the acid into the surface of a laryngeal ulcer, dispensing with the scraping process, will in many cases give excellent results.

The effect of the lactic acid treatment is very different from that of the treatment by other agents in common use; for while under some of the latter the surface of the ulcer will become tolerably well cleaned and apparently healthy, under lactic acid not only does this occur, but there is, as well, a marked tendency to cicatrization, which is distinctly not observed in the case of the first-mentioned drugs.

The indications for Krause's operation are, ulceration or œdema of the larynx sufficient to cause, *a*, laryngeal stenosis; *b*, pain and difficulty in deglutition; *c*, irritative cough.

It is absolutely necessary to the success of the operation that the disease be quiescent, *i.e.*, that there be no perichondritis and no active inflammation of the surface present. The latter should be of the characteristic grey color, devoid of the redness which denotes recent congestion. When these precautions are

disregarded there is danger that an inflammation more or less serious and widespread may be established. Indeed, the only instances in which Professor Krause has reported unfavorable results have been in cases in which the presence of active inflammation was not recognized and respected, and in which the extension of the inflammation called for measures of relief.

Where the case is far advanced and the symptoms are very severe, the treatment described is contra-indicated, sedative treatment alone being admissible.

In favorable cases, however, in which inflammation is not present, large masses of œdematous tissue may be removed, with brilliant results in the relief of the dyspnœa, the cough, and the dysphagia.

The operation by Krause's method is somewhat painful, even under cocaine, and for two days after its performance the patient is liable to undergo considerable discomfort. This is particularly the case in swallowing. By way of after-treatment the patient should be kept as quiet as possible, speaking should be interdicted, unirritating food should be carefully administered, and any tendency to inflammatory reaction checked by the swallowing of cracked ice, and by cold applications to the throat over the region of the larynx. Rest in bed is sometimes desirable. In cases where there is any tendency to laryngeal stenosis following Krause's operation, the writer would suggest that dyspnœa may be avoided by the employment of intubation, as the introduction of an O'Dwyer tube for a few hours would probably succeed in relieving the difficulty.

Under the influence of the lactic acid healing is generally rapid, and the resulting cicatrix remarkably healthy in appearance. The most striking feature of the case is the absolute disappearance of the œdema, the interior of the larynx losing its swollen, sodden look, and the various parts of the organ appearing as in health.

Professor Krause states that he has operated in over one hundred cases. In none of these has he had bad results where no active inflammatory process was present. He has had but few failures; that is, cases in which some measure of relief was not afforded. A large majority of his patients have been helped.

In a considerable number the results have been brilliant. In several instances he has effected a cure. By the word "cure" it is not meant that the lungs were restored to health, but that the larynx was relieved permanently, during the life of the patient, of all of the symptoms complained of before the treatment was undertaken, the length of time varying from four years to six months. When it is remembered that in every instance these were cases which almost inevitably run a course alike unfavorable to the comfort and the prospect of life of the patient, it cannot be denied that, if the statements and arguments of the advocates of Krause's method be true, we have in it a measure far in advance of those now in use, and one likely to be of incalculable benefit under most trying circumstances.

Pain, as a rule, does not seem excessive, even in the more severe cases, while the suffering which follows it for several days may be greatly relieved by the use of the proper remedies and applications. The healing process is so rapid that the painful stage quickly passes away, the suffering incident to the operation being inconsiderable in comparison with the radical and permanent relief afforded.

The good effects of the operation are speedily experienced by the patients, in consequence of which they do not object to necessary repetitions of it, but continue in regular attendance at the clinic as long as may be required.

It is not claimed that by this or by any other treatment directed to the larynx a cure of general tuberculosis can be effected. It is perfectly fair, however, in referring to the local condition, to call that case cured in which all trace of active disease has disappeared from the larynx and all active symptoms referable to that organ have passed away, particularly where there is no recurrence of the local trouble during the remainder of the patient's life.

Mr. Symonds, in following the views of Professor Krause, very aptly suggests that our objects in operating are: "1. To relieve the cough and dysphagia, and so to bring about improvement in the general health, enabling the patients to swallow. 2. To diminish the liability to pulmonary affection. 3. To produce a more rapid recovery in those cases disposed to a

spontaneous cure, much as is done in cases of tubercular disease of joints."

All of these objects, he believes, seem to have been attained by one or more of the methods described in this paper; and he also maintains that the results of such treatment fully justify our recommending the local or surgical treatment of laryngeal tubercle on lines similar to those employed for the same disease in other parts of the body.

Again agreeing with Krause, Symonds holds that the cases most suitable for operation are: "1. Those in which there is no evidence of pulmonary disease. 2. Those in which there is severe dysphagia and cough, with existing, but not rapidly advancing, pulmonary disease. 3. Those in which the pulmonary disease is early or chronic, as in these the latter may improve."

All the conditions present in tubercular laryngitis are amenable to treatment, but those most suitable are the tubercular tumor, that is, the localized formation of a mass of granulation tissue; next, the ulcer into which the lactic acid can be rubbed; and lastly, the infiltration and oedema, which may be removed by the curette. No one will be inclined to operate on patients with advanced pulmonary disease when there is hectic and rapid emaciation. . . . Granting the value of good hygienic surroundings which, of course, must not be lost sight of, for patients who cannot afford the luxury of a residence in the Adirondacks or in the South, where, no doubt, spontaneous recovery is greatly favored, much may be done even in unfavorable surroundings by local treatment. Speaking of the severe cases, Professor Krause says: "We must not despair even in these. I have observed cases in which, with all the unfavorable local and general symptoms, a careful and continuous local treatment was successful in curing the laryngeal disease. And I have seen others in which the disease was arrested, and, in comparison with the existing torments of hunger and inanition, a condition result which was at least bearable."

It is to be hoped that the suggestions which are given above may result in the thorough investigation of Krause's method in this country. Should it fulfill the promises made for it a great advance in the treatment of tubercular laryngitis will have been made.

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# THE OPHTHALMIC RECORD.

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## OPTIC NEURITIS.

Written for the Ophthalmic Record by

J. T. HERRON, M.D.,

JACKSON, TENN.

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Believing this case to be one of unusual interest I have with the assistance of my friends, Drs. Crook and Chester, decided to give it to the readers of the "Ophthalmic Record."

These physicians saw him several weeks before I was called, therefore, wishing to make as correct report as possible, I have copied the first part of this history from the record of Dr. Crook as he saw the case first, after which Dr. Chester was called in consultation.

H. G., æt. 15. "I was called to see him on May 5th, 1891. Found that he had been confined to his room four or five days with a severe headache, his tongue was heavily coated, bowels constipated, urine very scant, and highly colored, loaded with uric acid, and urates. I prescribed calomel and soda, followed by a large dose of magnes. sulph., which relieved him to some extent of his headache, but not entirely. He complained of great soreness in his shoulders and chest, also pain through top of head, and at times back of head, and behind his shoulders. I prescribed quinine, and further saline purgatives, thinking his trouble due to cold and La grippe, which had caused sufficient suppression of the urinary secretions to produce a

'uremic headache.' The fact that opening his bowels, and establishing the urinary secretion gave great relief, seemed to justify this conclusion. He seemed to suffer with a weak stomach, that would reject almost any diet, and especially the quinine. His parents told me that it was always with difficulty that he could retain quinine on his stomach. He never seemed to have any fever, his temperature seldom reaching 99°. In a few days his headache returned, or became more severe again. I had Dr. Chester called in consultation and we applied a blister to back of head and neck, and a similar treatment, except a little chloral and morphia to relieve suffering and insure sleep.

"May 21st. Patient began to improve, was put on tr. nucis vom. and dil. phosphoric acid, and bowels kept open with salines and rhubarb mixture. About June 1st, the severe headache returned more aggravated than ever. I then had to resort to hypodermics of morphia et atropia, or give it internally to relieve pain; also a combination of phenacetin and caffeine. Gave the latter preparation with the morph. et atropia added when necessary. In a few days he began to complain of double vision, and then dimness of vision, when I had Dr. Herron called in. About this time I learned that he had received a severe lick on back of head, with a piece of brick bat, about two weeks before he was taken down with the headache, and that his head had ached more or less all the time after the blow had been received."

On June 12th, I was called in consultation with Drs. Crook and Chester to see this patient. I found him greatly emaciated and prostrated, also extremely nervous. His intense suffering in head and extending down back, could only be controlled by morph. et atropia. He was blind and had been so about 24 hours. His pupils were about the size of a pin-head from taking morph. I used a mydriatic before I could make a thorough examination.

With the ophthalmoscope I found second stage of Optic Neuritis, or what some authors call choked disc. An accumulation of fluid seemed to be in the sheath. The optic nerves were intensely swollen, also the surrounding retinae. The edges of papilla extended out. The arteries were almost invisible. The

veins greatly engorged. Large hemorrhages were around both nerves, extending only a short distance in the retinae. Both eyes seemed alike.

Several different opinions have been given upon the nature of this case. When I first examined, I considered Tubercular Meningitis, taking in consideration the condition of patient. In a few days the patient began to improve so rapidly, physically, that I abandoned that idea. My second consideration was given the stroke he had several weeks before he was taken down. It left a scar about three-fourths of an inch long about one inch to left, and below occipital protubance. Notwithstanding the different opinions, I believe that the stroke set up local Meningitis, at base of brain, and that extending down the optic nerves produced blindness.

Flint's 5th edition of Practice of Medicine, tells us a stroke in back of head will produce meningitis. For accuracy will quote him:—"It is, however, to be borne in mind that, in most cases, it is possible to recall some injury of the head within a period of weeks or months prior to the occurrence of this disease in childhood."

On July 29th, this patient was taken to Drs. Briggs and Savage, of Nashville. The former said the blindness was caused by inflammation of "*Corpora Quadragemina*;" the latter, by "*Basilar Meningitis*." The question which interest me most at present, is to know what caused the local inflammation of which we have spoken. We know that his blindness was caused from an inflammation at some spot in the brain or its coverings. But must we stop there and be contented, and say it is ideopathic which in my mind is not impossible, yet hardly probable?

This patient has suffered for years from catarrhal trouble, which has been entirely checked without treatment since about second week of his illness.

The treatment given below will extend from June 12th, the time I first saw him, until present.

His suffering was so intense, the morphia was kept up, about  $\frac{1}{4}$  gr. every three or four hours, for several days. We blistered both temples with cantharidal collodion.

Preferred cupping which extreme nervousness prevented.

Ordered hot foot baths every night. Sufficient salts every morning before breakfast, to produce two or three large stools during twenty-four hours.

Commenced with potass. iodide, gr. x in malt every 4 hours day and night; kept him in dark room.

At end of first week his head was more quiet, and rest less disturbed, also looked much better.

No noticeable change in fundus. No change in treatment, except lessened morph. and added bichloride mercury sufficient every 4 hours for  $\frac{1}{4}$  grain in 24. He continued to grow more quiet and stronger. At end of second week, I found swelling greatly reduced, hemorrhages disappearing. We cupped each temple and drew about 5j ss from each.

His condition better at end of third week, swelling still reduced; hemorrhages all gone from around region of optic nerves. In right eye large hemorrhage in macula; in left, small white star-shaped patches in and around macula. Treatment continued, also added  $\frac{1}{6}$  gr. pilocarpine every evening, followed by profuse perspiration. We suggested this at first, but feared extreme weakness would not permit.

July 28th, cannot see much change, only hemorrhage in right macula lessening. Optic nerves growing whiter.

Since he returned from Nashville, Aug. 1st, he has been taking potass iodide gr. v., bichloride  $\frac{1}{16}$ , ergot gtt. xx 3 times a day, at suggestion of Drs. Briggs and Savage. I examined him Aug. 21, hemorrhage in right eye gone from yellow spot, no change in nerves, arteries contracted, veins not so full. No headache for a week. He tells me about three weeks ago, he suffered about two weeks in region of stroke in back of head; at present his general health is good, grows stouter each day. He is hopelessly blind.

DOUBLE OPTIC NEURITIS THE SEQUELA  
OF "LA GRIPPE."

Written for the Ophthalmic Record by

L. A. LEBEAU, M.D.,

St. Louis, Mo.

Mrs. C. W., æt. 32, presented herself on February 7th, 1891, with the following history :

On January 11th, she was confined to her bed with sore throat, head-ache and severe pain in her eyes with general muscular pain and fever which lasted about one week. She then noticed that the vision was bad in both eyes, she saw, she says, as "through smoke."

The pain in the eyes has continued with more or less intensity and her vision has been steadily failing till now she is almost blind. Upon examination I find that vision of the left eye is  $\frac{2}{200}$  and of the right not quite so good. Her pupils are widely dilated, but this is probably due to atropine as she has been instilling drops in her eyes given by her family physician. When she moves her eyes rapidly from side to side she complains of a sharp severe pain which she locates back of the ball of the eye.

The Ophthalmoscope reveals a double optic neuritis (decending optic neuritis) much more intense in the right eye than in the left. The swelling of the disks is not very pronounced but the veins are decidedly engorged, and there is slight pulsation. The arteries are about of the normal size. The retina, with the exception of very slight infiltration along the vessels, presents nothing abnormal.

Questioning her closely I can elicit no history of syphilis. She is the mother of four living children and has never had a miscarriage. I find neither albumen nor casts in the urine. Menstruation has always been regular, the last period a few weeks ago. I find nothing in her history, except the attacks of Influenza, to account for the neuritis. That she had Influenza is again confirmed by her statement that several members of her family were similarly afflicted during the month of January.



The treatment followed consisted of a nourishing diet, tinct. ferri chloride, pot. iodide in increasing doses, hydrarg. protiodide  $\frac{1}{4}$  grain twice a day with fluid extract of jaborandi in increasing quantity, beginning with  $\overline{5i}$ .

February 12th, vision is  $\frac{3}{200}$ .

February 17th, vision is  $\frac{2}{70}$ . Ophthalmoscopic examination shows some improvement.

March 3rd, she is taking 180 drops of fluid ext. of jaborandi with no perceptible action on the skin and only very slightly on the salivary glands, vision however is  $\frac{2}{30}$  with either eye. In the right eye the disk and the veins are nearly normal. In the left it is still somewhat marked and the veins engorged.

March 31st, vision is still perfect in either eye and with the ophthalmoscope I find that both disks and vessels are perfectly normal.

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[In connection with Dr. Lebeau's report, as published above, I extract from the Buffalo Medical and Surgical Journal, Sept. 1891, some notes on "Influenza as a cause of Optic Neuritis," by Dr. A. A. Hubbell, of Buffalo, N. Y. Editor.]

#### INFLUENZA AS A CAUSE OF OPTIC NEURITIS.

MACNAMARA, of London, in a recent address, (*British Medical Journal*, August 1, 1891,) alludes to neuritis of the optic nerve occurring in conjunction with influenza, and as appearing analogous to cases which he has described as "malarial peripheral neuritis." He refers to four cases, three male patients and one female, suffering from double optic neuritis, which came on while they were passing through an attack of influenza. In these cases the patients' sight had been perfectly good until they were seized with influenza, and there was no evidence of any intracranial affection, albuminuria, or any other cause with which could be associated the affection of the optic papilla from which they suffered. In the first case that came under observation, the patient had been absolutely blind for six weeks before he saw him. There was intense papillitis with numerous retinal hemorrhages. Both optic discs became atrophied and the patients did not regain the slightest perception of light. The

other cases were recent and showed uncomplicated papillitis with great impairment of vision. The discs in all three cases gradually cleared up, mercurial treatment being used, and the patients regained perfect vision. He suggests that the neuritis depends "upon either direct local irritation produced by microbes on the optic nerve, or on the ptomaines secreted by these micro-organisms."

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DR. WEEKS, of New York, (*New York Medical Journal*, August 8, 1891,) has also written an interesting paper on forms of optic neuritis, caused by *la grippe* or influenza. He reviews cases published by others, and cites one case of his own. In all, he collects fifteen cases. Of these, "nine occurred in females and six in males, at ages ranging from eighteen to fifty-eight years. There was an inflammatory condition of the disc in four cases; paling of the disc, more or less marked, in eleven cases; one eye was affected in four cases, both eyes in eleven. Blindness (permanent) resulted in one eye in one case; perception of light in two eyes in two cases. Approximately, complete recovery occurred in one case only. The scotomata produced were very varied, affecting all parts of the visual fields. Central scotoma without appreciable limitation of the visual field occurred in two cases. The scotomata were for *all colors* except in one case." Weeks draws the following conclusions:

1. Neuritis of the optic nerve due to *la grippe* is of relatively rare occurrence; it may affect one or both eyes, and may produce partial transient impairment of vision, partial permanent impairment of vision, or absolute permanent blindness.

2. Failure of vision begins from three to fourteen days after the commencement of the attack of *la grippe*, and proceeds quite rapidly. It is always preceded by intense frontal or circumorbital cephalalgia.

3. The form of scotoma produced is probably dependent on the position of the neuritis in the course of the nerve from the globe to the chiasm. If immediately behind the globe, the macular fibres are affected; if near the optic foramen, the peripheral fibres suffer first.

4. Treatment has but little effect to promote a cure. If recovery follows it takes place spontaneously and accompanies improvement in the patient's general condition.

## ORBITAL INFLAMMATION.

Written for the Ophthalmic Record by

T. HILLIARD WOOD, M.D.,

NASHVILLE, TENN.

Professor of Physiology Medical Department University of Tennessee.

Two cases of orbital inflammation illustrating different grades of severity, and due to different causes, recently came under my observation. I report them in the order of their occurrence.

Case I. Male, *æt.* 30 years. Had enjoyed good general health. In Oct. 1890 he had pain in second molar of left upper jaw and had the tooth removed. For several weeks afterward the left upper jaw continued sore and painful. This pain and soreness slowly extended upward and became greatly aggravated in the left orbit. Some days before I saw him the left eye became sore, the lids swollen, the conjunctiva injected and vision impaired. His physician was called in and prescribed anodynes and cooling lotions. As he continued to grow worse, I was called Nov. 22nd, 1890, to see the case in consultation.

I found patient in bed, face flushed, eye-lids enormously swollen and purple, ocular conjunctiva congested and protruding out between the lids. The chemosis was peculiar and I have sometimes thought characteristic. The swelling assumed accurately the form of the palpebral fissure, i. e. the conjunctiva was only swollen where it was not pressed by the lids. The swollen portion of the ocular conjunctiva was infiltrated with serum, which gave it the appearance of translucent jelly. The ocular conjunctiva where pressed by the lids, and the palpebral conjunctiva were scarcely hyperaemic. The conjunctiva was bathed in a muco-watery secretion, but no pus. That amount of chemosis, if caused by a conjunctivitis, *per se*, would, I think be attended by a far greater discharge of a purulent

character. The chemosis was out of proportion to the character and quantity of the discharge. Indeed the appearance of the lids and conjunctiva was not that of inflammation but of congestion and stasis due to venous obstruction. I thus emphasize these characters of the chemosis, because they were all well marked in three cases of orbital inflammation which I have seen.

The eyeball was displaced so far forward that the lids could not be closed over it. Its mobility and vision were much impaired. The mind was also clouded, leeches, anodynes and hot fomentations were advised.

Next day all the symptoms were worse, also well developed delirium. An incision into the orbit was advised but declined, and patient died the following night with what seemed suppurative meningitis. No autopsy was allowed but all facts indicated an inflammation beginning in an upper tooth, extending to the antrum, thence to the orbit, causing orbital cellulitis and abscess, and by extension, backward suppurative meningitis and death.

Case II. J. D. male, æt. 75, tailor. Has always enjoyed excellent general health, and is now quite active for one of his years. Patient states that fifteen years ago he was hit in the right eye by the limb of a tree, that the eye pained him for some weeks and then went perfectly blind. Since then his eye has remained blind, but has caused him no further pain.

On July 10th, 1891, without any premonitory symptoms about the eye he had a chill followed by fever and pain in right eye-ball and orbit. The conjunctiva was congested and lids oedematous. His physician prescribed laxatives and anodynes. Next day the congestion in conjunctiva and lids together with the pain in and around the orbit were much increased.

I saw the case July 12th in consultation. Found patient in bed, with slight fever, the lids much swollen and of a brownish hue. The conjunctiva presented the same character of chemosis as occurred in preceding case. The globe was displaced forward four mm. Orbital pain was greatly complained of and was increased by pressure on the globe. Advised anodynes and hot fomentations also atropine to dilate the very small pupil in order to examine fundus.

Next day found atropine had had no effect on pupil. The increased pain, swelling of conjunctiva and lids, proptosis and fixity of the globe were well marked. There were also some cerebral symptoms, such as pain in the head, confusion of thought with a pulse of sixty per minute, and nausea.

The eye being blind an enucleation was advised, and at once performed, under ether, in the usual way. No pus was found but the orbital tissues were decidedly inflamed and bled freely. Recovery was rapid and uninterrupted, the patient being on the street within four days.

The enucleated eye was opened and examined microscopically. There was a layer of cheesy material two mm. in thickness, situated between the choroid and retina, extending over the entire fundus and forward to the ciliary processes.

A third case recently came under my observation in which an inflammation beginning in an upper molar tooth extended to the antrum and thence to the orbit and was followed by orbital abscess, which was opened successfully through the upper lid.

The cases show that orbital inflammation may have its origin in remote, anatomically and physiologically separated, parts. Witness the first and third cases above reported, in which it originated in an inflamed tooth. These cases should impress us as to some of the frequent causes, and not infrequent results, of abscess of the maxillary sinus, and also remind us that in orbital inflammation free and early incision into the inflamed tissues is the most potent remedy for good, not only in preserving intact, the tissues of the orbit, but also in preventing the far more serious result of meningitis and death.



## INCIPIENT CATARACT; ITS ETIOLOGY, TREATMENT AND PROGNOSIS.

*Read in the Section on Ophthalmology, at the Forty-second Annual Meeting  
of the American Medical Association, held at  
Washington, D. C., May, 1891,*

BY S. D. RISLEY, A.M., M.D.,

Attending Surgeon at the Wills Eye Hospital, Philadelphia; Lecturer on  
Ophthalmology in the University of Pennsylvania; Professor of  
Ophthalmology in the Philadelphia Polyclinic and  
College for Graduates in Medicine.

\* \* \* \* \*

In many of these cases the progressing opacity can be arrested; in still others the rapid increase can be greatly retarded, and failing in this the eye will be in a more favorable condition for operative interference, by virtue of the treatment instituted. For many years, I have with increasing confidence given this opinion to persons applying for relief from their failing sight, consequent upon the blurring lens fibres and the associated conditions, which it is here claimed sustain to each other an etiological relation, and are, in large measure, amenable to treatment. In the present paper no new facts are brought forward, but at the request of the Chairman of the Section it gives me pleasure to once more call attention to the views before expressed, which I do with increased confidence after two years of additional experience, and a more careful study of the data at my command.

\* \* \* \* \*

That no misunderstanding may occur as to the claims to be made for the treatment of beginning cataract, I wish to say that I have never seen an established opacity of the lens disappear. In my experience, an opaque spicule once formed has remained or increased. When, under treatment, vision has improved, it has not been from the removal of the opacity in the lens fibres, but from the improved condition of the vitreous body, the retina and choroid.

\*       \*       \*       \*       \*

The clinical picture presented by this group of *weak eyes* is important to our purpose. Subjectively, we have the familiar picture of asthenopia. They present, however, a characteristic group of objective phenomena which I design to connect with the forms of disease so frequently seen after forty-five years of age, and especially with opacification of the lens. Much has been written to establish the relation of cause and effect between eye strain and the inflammations involving the choroid and retina and the external tunica. A bibliography of this field of observation is no longer necessary, since it has been well established in the practice of ophthalmic surgeons. The woolly choroid or fluffy eye-ground, with the two capillary nerve surfaces; the ragged nerve margins; the ripe-peach choroid; the narrow crescent of choroiditis embracing the temporal margin of the optic nerves, and its steady advance to the large atrophic conus or posterior staphyloma of the distended myopic ball, are well understood, but I am not so sure that we habitually connect with these intra-ocular disturbances the affections of the external tunica. The chronic hyperæmia of the conjunctiva, and dilated anterior perforating vessels, the swollen and red caruncles, the blepharitis ciliaris, the increased secretion and partial retention of tears, the recurring styes, are frequently but the external expression of the grave disturbances of the circulation of the intra-ocular tunica.

It were cause for surprise if in the presence of this general disturbance of the nourishing membranes of the eyeball, the vitreous body and crystalline lens, divorced as they are from a direct vascular supply of nourishment, did not frequently suffer in their nutrition. Indeed, reasoning *a priori*, one would anticipate a proneness upon the part of these avascular structures to accept disaster, in the presence of any cause which would impede their ready supply of nutriment.

\*       \*       \*       \*       \*

While the uncorrected errors of refraction, particularly in the educated classes, and in those whose vocation demands accurate vision at a near point, are doubtless the most frequent cause of the choroidal conditions which are here described, there are

numerous other causes, which are sufficient in themselves to set up and maintain an analogous choroidal state, and are equally baneful in producing the dangerous sequelæ which befall the eye after forty years of age. Among the most important of these causes is exposure to light and heat: *e. g.*, in the case of the artisan at his work-bench, facing with his unprotected eyes, a window or gas-jet for many hours in every day; the cook over the heated range; glass-blowers, puddlers, stokers and engineers. Such persons are quite uniformly the subjects of subacute choroiditis, presenting pigment clouds and absorption splotches in the choroid, and red optic disks with blurred margins, and very often with fine webs in the vitreous, or impaired transparency. It has fallen to my lot to see many examples of this, and, in not a few, posterior capsular opacities and opaque spiculæ in the margins of the lens. At my request, Dr. George E. de Schweinitz examined twenty-five men employed in one of the most extensive iron works in this country, selecting those whose employment exposed them to the intense light and heat of the molten metal. With only two exceptions, these men were subjects of well-marked choroidal disturbance. It was interesting to note that the most marked changes were present in that eye on the side which the man habitually turned toward the furnace in working the heated metal. Other causes were carefully excluded in every case.

Another fruitful source of trouble is the prevailing notion that it is best for the patient to avoid the use of presbyopic glasses as long as possible. It is obvious that all the evils attending upon eye-strain are here present even in the emmetropic eye, and that, too, at a period of life when the attending dangers are enhanced.

I recall the case of an eminent clergyman, *æt.* 50, with emmetropic eyes, who, although an industrious student and author, had not worn glasses. He came complaining of burning eyes, with a sense of fullness or tension, during and after his work, and severe occipital pain, which caused him not a little anxiety, because of its possible grave import. He had marked choroido-retinal irritation, and suffered greatly from insomnia. He received presbyopic glasses, and in a few weeks his headache

and insomnia had disappeared, and with it his anxiety about his anticipated nervous break-down.

\*       \*       \*       \*       \*

In looking over the clinical records I have been struck with the much greater frequency with which the lower part of the lens was involved than the upper, the commencing opacity almost habitually being below. It is in the lower part of the choroid also we ordinarily find the most marked pathological change, in many cases, particularly in clerks who sit facing window or gas light at their work, or in the case of artisans who are frequently compelled to stand at the work bench facing the light.

There is probably no question in the minds of ophthalmic surgeons regarding the causes of the choroidal engorgement and disease, but it is my purpose to show, that there is a positive relation between this choroidal state and the lenticular disease. That these deductions are not based upon purely theoretical grounds find ample demonstrations in the following statistics gleaned from my private case-book by Dr. John T. Carpenter, Jr.

A brief analysis of eighty cases with incipient cataract gave the following interesting results. The ages ranged from one æt. 26 years to one æt. 87 years, and presented all stages of development of the opacity.

In *thirty-seven* cases there was a clear history of "weak eyes" and long standing asthenopia, *i. e.*, headache following use of the eyes; recurring styes, blepharitis, etc., often dating back to childhood. In the remaining cases there was either no note bearing upon this point, or it was noted as absent. There was demonstrable refraction errors present in *fifty-eight* cases—either in one or both eyes. These errors were also noted as present if, *e. g.*, the individual brought his glasses, worn for distance before the failing vision from his cataractous lenses was observed, even though the opacity was too far advanced to permit the determination of the refraction at the time of the consultation.

In the remaining cases it was either impossible to determine the state of the refraction or its study had been neglected since. No information could be gained from the records. Vitreous opacities, webs, etc., are noted as observed in *twenty-two*

of the cases, and choroiditis in *fifty-eight*. In many of these areas of pigment absorption, macular disease, choroidal splotches and other gross changes are carefully described, as present in one or both eyes. The wooly choroid, crescents of choroiditis at margins of the nerve and pigment absorption, "ripe peach" choroid, etc., are included in this group if the conditions were sufficiently marked to be justly regarded as a disturbing factor in the nutrition of the eye.

In some instances the opacity was too far advanced to admit of any study of the fundus oculi, on one side, but if choroidal changes or vitreous opacities were present in the better eye, the case was included as one of choroidal disease, whether the eye in which the study was made presented lenticular opacity or not.

The frequency with which the affections of the external tunica was noted as present forms also a striking feature of this group of cases. The conjunctival irritation, partial retention of tears, swollen caruncles, and blenorrhœa of the lachrymal sac were observed in *forty-five* cases. In the remainder the record was silent. The frequency with which affections of the lachrymal sac had been noted and treated, was a source of surprise.

The number of cases might have been greatly enlarged, but these were sufficient to show the very obvious relation which exists between the formation of opacities in the crystalline lens and local pathological conditions, and if they serve to show that incipient cataracts, in many instances, belong in the category of possible preventable diseases of the eye, the purpose of the essay will have been attained.

Among the many interesting details which appear in the study of these cases, is the fact that after the opacity has advanced sufficiently to prevent the use of the eyes at near work, and to exclude the light, that then the asthenopia and external inflammation gradually subsided. It is probable that the enforced rest thus secured to the eye permits also the gradual subsidence of the choroidal disease.

In this fact Nature affords us a suggestion for the management of these cases at an earlier stage in their history, when by rest and appropriate treatment, it is still possible to cure the choroid



al disease. If the progress of the opacity is not by this means arrested at a point where useful vision is still possible, the prognosis upon operative interference would be more favorable than would be the case in a badly nourished organ.

\*       \*       \*       \*       \*       \*

In the views here expressed we find additional argument favoring the great importance of carefully correcting the refractive defects in the eye, since they lie at the foundation of certain diseases which strike at the very root of the vital process upon which the health of the eye depends. It would seem to justify, furthermore, the conclusion: *That, while opacity of the lens is a disease of advanced life, it does not, in all probability, depend upon senile change, but is originated in local pathological states involving the nutrition of the eye itself.* That hence, in the stage of incipieney, it is amenable to treatment by such measures as are calculated to remove the choroidal disease upon which it depends. That if these deductions are true, we are justifiable in giving a more hopeful prognosis to many persons who apply for tretament with incipient cataract. That if treatment fails to arrest the progressive degeneration in the lens, by virtue of the treatment adopted, the eye will be in a better condition to submit to the trials of operative interference. *The Journal of A. M. A.*

1422 Walnut Street, Philadelphia.

PLUMBIC ACETATE SHOULD NOT BE USED AFTER  
COCAINE.—ACCIDENT IN IRIDECTOMY.

REPORTED BY

DON M. CAMPBELL, M. D.

DETROIT, MICH.

Case I. Showing the ill effects of *over use* of cocaine and the *inappropriate* use of plumbic acetate.

Mr. L., aet. 46, referred to me by his family physician, who had seen him two or three days previously and had prescribed a 2 % solution of cocaine hydrochlorate, to relieve a painful corneal ulceration due to extensive trachoma. This gave the patient such glorious relief that he disregarded his physician's injunctions relative to the *moderate* use of the cocaine, and applied it continuously for twelve hours, when the corneal epithelium had dessicated and sloughed off completely.

Then an officious neighbor lady recommended the instillation of sugar of lead. A super-saturated solution was used and the whole cornea in each eye was thickly coated over with an oxide of lead deposit. The deposit in each eye came up so near to the corneo-scleral margin as to preclude the possibility of an iridectomy. Result:—Loss of all useful vision.

Case II. Showing great recuperative power of eye.

Mrs. K., aet 53, consulted me June 6th, 1891, complaining of almost complete loss of vision, and giving a history of a severe acute inflammatory disease of both eyes, six months before, which had gradually subsided but left her practically blind and subject to great exacerbation of pain in each eye.

Upon examination she presented a complete picture of glaucoma absolutum. I advised an iridectomy for the relief of pain to which she readily consented.

Everything went well at the operation until, in trying to free a small piece of the iris which had become entangled in the edge of the wound, I tore the iris completely loose from its ciliary attachment for fully one half of its extent.

Then thinking it would be impracticable to allow the iris to remain flopping around in the anterior chamber like a town flag in a breeze of wind, I re-introduced my iris forceps and grasping the iris firmly I removed it *in toto*, it tearing away from its attachment without any trouble whatever.

The blood was thoroughly removed from the anterior chamber and the eye dressed in the usual way, and to my surprise, the healing process was quick, complete and uncomplicated; the final result being as good as could be expected viz:—relief of pain but no improvement in vision.

39 Fort St., West.

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## INSUFFICIENCY OF THE RIGHT SUPERIOR AND THE LEFT INFERIOR OBLIQUES.

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*Editor Ophthalmic Record,*

Dear Sir :

At a recent meeting of the American Medical Association, Dr. G. M. Gould of Philadelphia read, in the section of Ophthalmology, a valuable paper on Astigmatism. In this paper he referred to cases in which the axis of astigmatism was different during and after atropinization and called for the experience of others on this point. Your correspondent mentioned the following case :

Mrs. E., married, æt. 22, had her eyes examined and an error of refraction corrected two years ago by a well known oculist in Chicago. I found she had received for each eye + 1 D cyl. 90°. She said they were prescribed while her eyes were under the influence of atropia, and that they gave her  $V = \frac{2}{3} 0$  at the time. But after a time and gradually asthenopia returned. Her vision now, with glasses, was  $\frac{2}{3} 0$ , without  $\frac{2}{4} 0$ . Under atropine + 25 s  $\odot$  + 1 cyl. 90° gave  $V = \frac{2}{3} 0$  both eyes. After the effects of the atropine had fully worn away, with these glasses  $V =$  only  $\frac{2}{3} 0$ . By shifting the axes of the cylinders to 100° vision of  $\frac{2}{3} 0$  was again procured. The above combination with axes of cylinders at 100° was then ordered, and has since given entire relief; viz.

since March, 1891. Now I am satisfied that under atropine, both in Chicago and here the axes of cylinders were correctly placed at  $90^\circ$  and I am equally well satisfied that without atropine the only correct position was  $100^\circ$ . Why this difference?

The question is not answered by our text books, and is very rarely and only lately referred to in periodicals. The discussion of this interesting and very practical point was ably begun by yourself and others at the meeting, but was limited by the time. I, at least, should like to see it resumed in the *Record*, with if possible a complete explanation. I offer none myself at present.

Very truly,

H. MOULTON, Fort Smith, Ark.,

Aug. 4th, 1891.

P. S. In the above case the subjective tests were aided by the retinoscope.

H. M.

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In reply to the above enquiry it may be said that, barring the possibility of erroneous placing of axes of cylinders at the time the two examinations were made, while both eyes were under the influence of atropine, there occurs to my mind but one explanation for the necessity of shifting the axes of the cylinders from  $90^\circ$  to  $100^\circ$ . There is one point connected with Dr. Moulton's case that was not investigated, at least no mention is made of it, viz. the measurement of the corneal curvature by Javal's Ophthalmometer. It is so universally true, as shown by the Ophthalmometer, that astigmatism is corneal, it may be reasonably inferred that, in this case, the 1 D of astigmatism was corneal. That the curvature of the cornea is not affected by atropine no one will deny. Hence the best meridian of an astigmatic cornea is the same whether atropine has been used or not. Then why this real shifting of the best meridian in both eyes? In the right eye there was an insufficiency of the superior oblique while in the left there was an insufficiency of the inferior oblique. At the time of the two examinations of this patient, made while both eyes were under the influence of atropine, full power was manifested by the weak right superior oblique thus holding the best meridian at  $90^\circ$ , its normal position,



and likewise by the weak left inferior oblique, thus holding the best meridian of this eye at  $90^\circ$ , its normal position. The axes of the cylinders were placed accordingly. If this state of tension of these two weak muscles had been kept up no indication for a change of the position of the cylinders would have arisen, but the patient would have been a sufferer still. At a fortunate moment for the patient and for Dr. Moulton, the Doctor observed a want of coincidence of the axes of the cylinders and the best meridians, and at once saw that, to correct this, each cylinder must be revolved so that its axis would be at  $100^\circ$ , to correspond to the abnormal position of the eyes effected by the over-acting right inferior oblique and left superior oblique. When the eyes were thus revolved the oblique muscles were in a state of equilibrium. The changed position of the axes of the cylinders, giving sharp and clear retinal images, encouraged the eyes to remain in this abnormal position, nevertheless position of rest, hence the relief that came to, and remained with, the patient.

That the atropine caused the full action of the weak obliques is hardly to be believed. The examinations happened to be made at times when the weak muscles were capable of full action, which times, no doubt, had often recurred before the glasses were given. At intervals after the glasses were given, while their axes were at  $90^\circ$ , there can be no doubt that these weak muscles exerted their full power and gave clear and distinct vision.

Any explanation for the phenomena observed by Dr. Moulton, differing from the one given, will be given space in the Record.

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## THE MISSISSIPPI VALLEY OPHTHALMOLOGICAL SOCIETY.

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It will be. Enough responses have been received by the Record to show that it will be a success. Only one has written offering argument against the proposed organization, and he stands open to conviction. Space in this issue will not allow much to be said either *pro* or *con*. Let all Ophthalmic Surgeons who can do so attend the meeting of the Mississippi Valley

Medical Association, in St. Louis, Oct. 14-15. On Oct. 15th, let us hold a preliminary meeting, with the view of effecting an organization either during this meeting or at some subsequent time. Come whether you are for or against the new organization. If it can be shown not to be a good thing let your argument prevent its birth. If it can be made a grand organization become a part of it in its very beginning.

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### YOUNG MEN'S CHRISTIAN ASSOCIATION OF MEDICAL STUDENTS.

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On Sept. 13th, forty-six young men, members of the Medical class of Vanderbilt University, organized a College Y. M. C. A., in the lecture room of the College. They enter this new work for medical students with earnestness and enthusiasm, and expect to add to their membership largely, as others arrive for the opening of the regular course, Oct. 1st. These young men have already raised by voluntary contributions enough money to purchase an organ, to be used in the meetings which they propose holding every Sunday afternoon from 3 to 4 o'clock, in the lower lecture room of the college.

This movement originated in the class, and was a surprise to the faculty all of whom, however, are pleased. Some of the Professors attended, by invitation, the preliminary meeting and gave encouraging talks. That this organization will result in the moral upbuilding and physical well-being of many of the large class to be in attendance this winter there can be no doubt. Mothers and sweet-hearts at home will rejoice that the young men have thrown around themselves such a restraining influence.

## Department of Otology, Laryngology and Rhinology.

GEO. H. PRICE, M. D., EDITOR, 621½ Church Street,  
NASHVILLE, TENN.

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### \* THE VOICE AND ITS TREATMENT.

ARTHUR G. HOBBS, M.D.,

Professor Ophthalmology, Otology and Rhino—Laryngology  
in the Southern Medical College, Atlanta, Ga.

Ex-President of the American Rhinological Association, Etc.

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In order that the caption of this paper may not be misleading I will say in the beginning that it is not the intention to discuss the beautiful and fascinating subject of voice production by the vocal chords proper, together with the individual mechanism of the laryngeal muscles; neither shall the etiology and pathology of the various forms of voice defects be entered into. But from a very prosaic and commonplace point of view I mean to speak especially of the various pathological conditions of the pharynx, naso-pharynx and nares which affect the voice of singers and elocutionists or indeed of any others who may apply for treatment for the sole or principal purpose of having a voice defect corrected.

ENLARGED AND DEGENERATED TONSILS, either in the form of acute, sub-acute, or the consequent chronic hypertrophy or hyperplasia, or it may be only in an apparently slight cryptic degeneration which increases the actual size of the organ, are among the most frequent causes of vocal defects. In any case the singer's voice particularly is affected, either in its resonance,

\* Prepared for the Annual Meeting of the American Rhinological Association, to be held at Indianapolis, Ind., Oct. 1891.

its register or its resistance. Again, it may be only in the inability of the singer to reach and hold sufficiently long the usual higher notes. Many of the milder forms of tonsillar affections may not be noticed by others, nor even by the singer until a prolonged attempt at singing is made when it will be found that the voice tires—the singer's or the speaker's accustomed resistance is impaired. In such cases the treatment must be made from the voice standpoint; that is, in cases of this character the cause of the defect in the voice should be treated even when treatment would not be otherwise deemed necessary. The means resorted to should not be too vigorous. The treatment of a singer's or a speaker's throat should differ in some respects from what might be proper in others.

When the tonsils are enlarged and by this it is meant to any extent sufficiently to press upon either the anterior or posterior pillars, or to project beyond their level, they should be amputated. This should be done even when it is necessary to raise the organ from its bed with a tenaculum or vulselum in order to clip with a blunt pointed bistoury curved on the flat. The greatest care must be exercised in such cases to avoid touching the pillars with the knife, as to cut one would in any case mar the expected good result. When the knife is refused, or for any good reason it cannot be resorted to, the galvano cautery is perhaps the next best, but I always resort to it with a protest in a singer's throat because it will not leave so smooth a surface as the knife. If, however, the enlargement is slight and principally confined to the crypts with a consequent cheesy exudation, the galvano cautery point introduced into two or three glands at each sitting till all are destroyed will accomplish sufficient destruction of the organ. I very rarely use the tonsilotome unless it be in a very nervous and timid patient, and voice cases, as a rule, are not of this character. This instrument will too often bruise a part of the stump, even in the most experienced hands, and it is desired to leave the stump slightly below the level of the pillars, which is not easy to do with this instrument. The cold wire snare may be used when the base of the hypertrophied tonsil is not too broad and this means is perhaps the best, but it requires much more time and is more

painful; indeed it can give a better result only when the operation is prolonged for the reason that the raw surface that remains will be smaller in extent. The galvano-cautery snare is very convenient and for special reasons may be the best means of reducing a tonsil, but as it leaves a harder cicatrix the knife is better in voice cases. The objection to the cold snare is the possible enucleation of the gland. I have never intentionally enucleated a tonsil and much less would I do so in a singer's throat, because of the cavity left between the pillars. This accidental result has occurred with me in two cases when using the wire ecrasure: one case in a child and the other in an elocutionist. No bad results followed, unless the good vocal results in the latter case were not what were expected. When the pillars are unusually prominent, with a broad tendon like appearance, it may be necessary to raise the tonsil from its bed and from between the two prominent pillars in order to clip off a part of it. In such cases, however, the gland is often honey-combed with a cheesy secretion when the galvano-cautery point bent to a right angle, will serve the best purpose, provided the greatest care be used to avoid burning the pillars. Electrolysis for the reduction of hypertrophied tonsils has not accomplished the results in my hands that are claimed for it by some continental writers. It seems too slow and tedious even if the final result could be confidently assured. To correct any abnormal condition of these glands when occurring in a voice throat, is one of the first essentials to a good vocalization. A chronically enlarged tonsil is a foreign body from a functional standpoint and it would be a good rule to decline to treat the voice when a case exhibits a prejudice to its removal and persists in it. Such persons will rarely fail to return sooner or later for treatment. Out of several thousand tonsil clippings I do not recall a single case in which the voice was not benefited as a consequence. It is true that statistics record some fatal hemorrhages from tonsil operations and many more in which the loss of blood has proved not only very troublesome to the operator but threatening to the patient's life. It is easy to understand how such a result may follow an operation with the knife if it be made upon one of those very rare cases that we choose to



say has a hemorrhagic diathesis, but this condition of the circulation will probably be very rarely met with in those who seek a consultation for voice defects. Again, a case may sometimes be met with in which an abnormally large artery may be cut; but it would be hard to appreciate the possibility of its ending fatally, when the operator has so many means at his disposal for checking hemorrhages in this locality. This is said with reference to the amputation of tonsils and not to their enucleation, since I have had but the two unintentional experiences in the latter operation. This is said in all due respect to the many distinguished operators who practice enucleation in preference to amputation.

**NASAL STENOSIS.** A partial or total closure of one or both of the nares either anteriorly or posteriorly is the most frequent cause of resonance defects in the voice. No voice, whether of a singer or speaker, can ever reach its perfection of resonance or even its full register when any obstruction exists in the nasal passages. When the stenosis is only partial, the defect is noticeable in the flattened and dulled intonation. When decided, this muffled speech is described by that misnomer "talking through the nose." Irregular and disproportioned nares, even though the combined area of the openings be normal, will retard the full development of a singer's voice. It is said of Americans particularly that they "talk through their noses," which can only be characteristic of them in nasal stenoses, if it be at all. An American's voice is naturally characterized by its resonance and softness, which is due to the fact that by education, habit and association he uses his nasal cavity in phonating perhaps more than others. For this reason it may be that our English cousins do not accuse us altogether unjustly of "talking through our noses," as any stenosis of this organ would naturally affect our vocal resonance most. As our climate subjects us to these obstructions more than does the Englishman's moist atmosphere, the pathological exception may seem to him to be the natural condition.

It will be necessary in this connection to consider especially only those varieties of nasal obstructions that consult us on account of the defects they cause to vocalization.

DEVIATIONS OF THE SEPTUM, either cartilaginous, bony, or both, in all their various shapes, including also exostoses, are amongst the most serious causes of nasal closures. For the reason that a partial narrowing of the nasal lumen will not in most cases interfere with any other function, unless perchance it be in some reflex cases, operations for its correction will be called for here much the more frequently.

The first essential in any operation in a misplaced septum, whether for this or any other purpose, is for the preservation of as much mucous membrane as possible. When this is the primary object it will make but little difference, except perhaps in the amount of pain to the patient, which one of the many different modes of operating may be selected. The narrow saw is the most generally useful instrument in my hands for correcting these deformities; Bosworth's or some of its modifications, are the most convenient as well as the most effective. I have slightly modified this saw for my own use, by having the teeth to cut both ways instead of only backward, and by making a small probe at the point to lessen the pain of its accidental posterior puncture. Many saws are either too thin, when they become ungovernable; or too thick, for the reason that the teeth lacerate too much tissue. Bosworth's cannot be objected to on either of these grounds. The upward saw should be used in all cases, where it is possible to use it, and the moment the teeth pass through the hard tissues,—before the mucous membrane is cut through,—the instrument should be withdrawn and the severed parts alone extracted with forceps, leaving the mucous membrane to fall over the wound. Then the antiseptic cotton plug, not too large to produce pressure, but of sufficient size to be retained, is introduced from above to press the unsevered membrane downward over the cut surface. It must be confessed that this is ideal and often not easy of accomplishment, nevertheless it is worthy of a trial as it is often successful, and if flap union fails the next best result is reached, and nothing, as compared with any other operation, is lost. Especially is this true if all other operations be not based upon the destruction of as little mucous membrane as possible.

The DRILL, run by an electric motor or dental engine, is much resorted to by some operators even in simple deflections; but, for the reason that I am still old fashioned enough to cling to the preservation of the membrane, I think this instrument should be used only on large exostoses or large septum spurs, and not even in these cases if it be possible to use the upward saw.

The *chisel* and *gouge* are also used by some, but the necessity for their use has never seemed to arise in any case before me. The cocaineization used in all of these operations, indeed in all the operations in the nasal or pharyngeal cavities, should be made as strictly local as possible. A piece of absorbent cotton shaped to fit the case is saturated, not dripping, in a freshly made, strong solution of cocaine and applied to the part, and allowed to remain six to ten minutes before the operation is begun. The constitutional effects, by this means, are less troublesome than when the spray is used to apply the cocaine on a larger surface.

TURBINATED HYPERTROPHIES. Just in proportion as the turbinated bodies are enlarged sufficiently to produce a greater or less degree of nasal stenosis, so will the vocal resonance be affected and the effort of singing and phonating be so increased that the voice soon loses its naturalness and easy control. And again, as in stenoses from any other cause, the nasal intonation is observed in the speaker especially and the singer's voice not only fails in its resistance, but the higher notes cannot be reached. Unfortunately too, those who have chronically enlarged turbinates or decided septum deflections or large exostoses, or indeed decided stenoses from whatever cause, can rarely hope that the usually complicating inflammations will not also be added to the nasal closure. Such complicating conditions for example as: subacute, chronic or follicular pharyngitis; subacute and chronic laryngitis; Eustachian inflammation; hypertrophied tonsils; adenoid growths, bronchitis, reflex neuroses, etc., etc. Hence it would seem that a nasal stenosis from whatever cause, especially when its possible sequellae are considered, would be perhaps the most frequent originating cause of defective vocalization. I believe this to be true not even excepting primary laryngeal

inflammations, because in my opinion these latter conditions are comparatively rare occurrences.

The two most frequent means resorted to now for reducing enlarged turbinates are the galvano-cautery and chromic acid. The snare, in any of its forms, should hardly be considered seriously in this connection, although occasionally a pointed soft and flabby turbinate may call for its use. My use of chromic acid differs from that of most operators. I use it partly deliquesced or, if it is solid, I make a paste of it in glycerine. A small cotton probe is dipped into it and applied, after cocainizing, to the most prominent point of the turbinate, taking care not to touch the opposite surface, and then with a dry cotton probe the part is carefully mopped until dry. This means should seldom, if ever, be used, if the surface to be reduced presses closely against the opposite tissues, because the resulting slough pressure produces too much pain, not only directly, but in many cases by reflex. On the second or third day the coagulated slough is easily removed with a cotton probe, after partially cocainizing the parts. Another and still another part is attacked at proper intervals, until all the prominent points are reduced. The contractile tissues are thus stimulated, and the contraction continues till the enlargement is reduced much beyond the size of the slough removed. When the hypertrophy is too dense and the reduction too slow, other means, as the galvano-cautery point will have to be used. A smooth, moist surface mucous membrane is the final result after this use of chromic acid. I have never tried the "buttoning down" process as used by some by burrowing into the tissues with chromic acid fused on a platinum point, but consider the galvano-cautery much better for this purpose. Singers will often speak of the improvement in their voice resonance and of the lessened laryngeal pains first complained of after the removal of even one slough. An acute pharyngitis will be produced after each and every application when it is used in this manner, unless the greatest care is exercised to prevent the acids from reaching the pharynx else the voice may from this cause be temporarily impaired and the subject very much discouraged. This point, I should particularly desire to impress, viz: in using chromic



acid as described above in its soft stage the danger of its spreading beyond the area desired might to some prove an insuperable objection to its use; but if cautiously applied and carefully wiped dry, this danger does not exist. No so-called neutralizing spray should be depended on immediately after its application. The surface left after the removal of the slough looks granular and red at first but in a few days a smooth, moist mucous membrane appears. Furthermore if the projection still be too great, another and yet another application can be made over the same area and a smooth surface will ultimately result. Such applications should be made only when the hypertrophy is soft, in truth only when the enlargement is a hyperplasia and not a true hypertrophy.

When the tumefaction has reached the true hypertrophic state perhaps there is no known means equal to the galvano-cautery for its rapid reduction. The cautery point will, as a rule, give better results than the cautery knife, because there is less mucous membrane destruction. In introducing the point the effort should be made to pierce the most prominent part at an obtuse angle till the bone is reached, then by a slight movement it is slipped along the bone with the object of touching as much at the base of the puncture as possible and at the same time not enlarge the mucous membrane entrance; always remembering to withdraw the cautery while it is still hot. The final result will be absolutely no visible cicatrix, and the operation is without pain.

The storage batteries in use in my office by myself and assistant are charged from a street wire and are always ready for use with all their necessary attachments. Barring the time, eight to ten minutes, necessary for the cocainized cotton plug to produce its effect, no more time is required in its application than in applying a cotton probe.

REFLEX STENOSES, such especially as those that cause the erectile tissues to temporarily enlarge either from irritation; vaso-motor paresis or increased nutrition, play an important role in imparting a nasal intonation to the voice of the speaker especially and to the singer also, by muffling the higher notes. Cases of this nature, however, have the usual hay fever symp-



toms and present themselves for treatment from another motive than voice improvement alone. In treating such cases for either or both purposes, resort may be had to the cautery or perhaps sometimes to the acid when the application should be made to whatever part that indicates the necessity, without reference to the areas whether anterior, middle or posterior. The results will, I think, prove equally as good for the accomplishment of either purpose as can be reached by those who look only for these areas.

POLYPI seldom assume much size before a singer will have called for an examination, since from their usual post-nasal situation even the speaking voice is quickly affected. The orthodox method of removing them with some wire snare, not with forceps, may be resorted to; remembering not to destroy the mucous membrane and then to touch the stump with the cautery or carefully with the acid.

ANENOIDS will, as completely, destroy the resonance as polypi with the disadvantage that they are more liable to be overlooked. The enlarged turbinates that are very probably present with adenoid growths in adults, will obscure the view of the latter by nasal inspection. In many cases it will be found best to first reduce the turbinates when the softer growth can then be reached through the nares with a snare. This in most cases will be a more desirable means to the patient, when it is at all practicable than the opposite route, on account of the retching and gagging produced by the curved forceps when passed under the plate. I will confess that I have sometimes overlooked these post-nasal vegetations at first only to discover them after reducing the turbinates. Such an oversight may occur when posterior views are difficult and the finger has not been used. These vegetations, polypi or an enlarged pharyngeal tonsil may be suspected when voice resonance has not been restored after the turbinates have been reduced.

PHARYNGITIS, in all of its varieties, will naturally interfere very greatly with the efforts of vocalization, but almost all inflammations in this region, other than the acute, are either accompanied by or have their origin in nasal or naso-pharyngeal inflammations. And yet, a misused voice either in a speaker or

a singer may strain and irritate the mucous membrane sufficiently to produce a subacute or chronic and especially a follicular pharyngitis without any complicating connection with the membrane above. All pharyngites that are complicated with nasal or naso-pharyngeal inflammations are more promptly cured when the treatment is first directed above, and then nitrate of silver may be guardedly applied to the whole of the pharyngeal wall reaching up to its vault. The strength of the silver solutions may vary from 10 to 50 grains according to the tolerance in each case, but the greatest care must be exercised in applying it in any strength up to the vault to prevent its running into the larynx. Phonation should be prohibited for some minutes after its application. When either sub-acute, chronic or follicular pharyngitis is produced by an ignorant use of the voice, and it is usually the follicular variety, the best and only final good results can be obtained from an elocution teacher. Mild applications of silver once a day to the pharynx for many weeks will, however, assist in the process of resolution while the exciting cause is being removed.

LARYNGITIS, either subacute or chronic, is usually a resultant condition—having its origin in the nares and naso-pharynx—just as the corresponding pharyngeal troubles are secondary. Or the incentive, as in the pharynx, may be a misused voice. Certainly it must be admitted that all of the varieties of inflammations, either of the larynx or pharynx may and do occur primarily, but, excluding the acute form, the sequel proves, in my experience at any rate, that they are secondary in most cases. The treatment will naturally then begin above as in pharyngitis, together with the direct applications to the larynx of mild sprays of astringents or resolvents; such, for example, as terebene, eucalyptol, aristol, etc., etc., dissolved in albolene, oil vaseline or indeed in any non-irritating oily menstrum in order that the spray can be inhaled. When misuse of the voice has been the origin of the irritation a somewhat similar treatment is indicated as in the pharynx, viz.: voice training. Such primary causes of hoarseness or other voice defects, as tumors or local manifestations in the larynx of tuberculosis or syphilis,

cannot properly be considered here as the patient has applied for the consultation from a more serious motive.

The total restriction of the use of the voice during its treatment, is seldom ever necessary, indeed the encouragement of its proper and moderate use, should be the rule. It would seem quite as unwise to advise a total voice rest because the muscles of its production have been weakened by an old inflammatory condition, as to advise a convalescent from typhoid fever not to attempt to walk because of his muscular weakness. Rare exceptions of course are made, when even the moderate use of the voice muscles increases the irritation. (It will be remembered that the voice treatment of acute inflammations is not now being considered.) Singers should be advised to moderately exercise the voice but never to attempt their highest or lowest register, and to cease all efforts before a premonition of weariness begins; no attempt is to be made when a conscious effort is necessary, or if a sensation of weariness should begin almost immediately. A similar rule will apply to speakers, who should be advised to read aloud regularly, but to cease at the first intimation of a tired feeling in the throat, or of an uncontrollable voice, and speaking aloud in the open air must especially be prohibited. Those who have been properly taught to conserve the voice, give the most prompt and satisfactory results, as it at once asserts itself when a judicious treatment has removed the mechanical hindrances.

When treatment is resorted to in any case solely for the correction of vocal defects, it is necessary that greater care should be exercised, even though the same means may be used as for any other end, than in cases that apply merely for the correction of the pathological lesion. The mildest means that will attain the end, even though a longer time be required, should be the rule, because less risks of violent inflammatory reactions are assumed.

As an aid to all other means of treating the voice throat, whether it be surgical or otherwise, oil sprays are invaluable. The oily base or excipient of the spray may consist of vaseline jelly, oil vaseline, albolene, or indeed any other of the neutral oily products of petroleum. Any one of these may be chosen

for the particular case according to its consistency or soluble properties. Oil terebene in albolene 10 to 20 minims to the ounce, may be used as an inhalation in all cases to stimulate the laryngeal and bronchial mucous membranes, as their secretions have been more or less perverted by the abnormal gravitations from above. A De Vilbiss spray producer with a power from a compressed air apparatus of ten to fifteen pounds to the square inch, is used for inhaling this solution—the hand spray may be substituted, but much less effectively. The spray is made either in the mouth or through the nares during a full inhalation. Any of the other oils can be used as solvents for either spraying or inhaling according to the necessities of the case, containing in solution whatever is indicated. The mucous membrane of the nasal and the post nasal, including all the accessory cavities, particularly that of the Eustachian tube and middle ear, manifests an antipathy to water unless the sp. gr. and temperature of the aqueous application be the same as its own secretions; this is not so with the neutral oils. For this reason I never direct a patient to use an aqueous spray of any character in the nasal cavities; this applies to singers but not less so to most other cases. I make some exceptions in my own use of nasal sprays as in spraying cocaine, resorcin, the bichloride, etc., etc., which are sparingly soluble in any of the neutral oils. But even in these exceptions the aqueous solution is placed in a spray bowl containing a warm, oily excipient and water being the heavier, it is first exhausted when the oil spray follows. I am sure that this paper has from its beginning subordinated sprays in voice treatment, particularly when it is possible to reach the nasal defect by any surgical means, and yet I consider their necessity, when intelligently used, only secondary to surgery. It is always soothing and many times otherwise beneficial to the nasal mucous membrane to leave it covered with a warm spray of vaseline at the end of a treatment. Proper hygienic instructions should be given these patients to lessen their liability to colds, on the other hand all “coddling” should be interdicted especially in the use of wraps or other extra appliances about the neck. If “coddling” of any part of the body is ever admissible, it would be of the feet, since improperly

protected feet will much more probably result in a throat or nasal inflammation than an unprotected neck. Some nervous persons exhibit a great anxiety about catching cold; this mental fear should be made light of since it no doubt in many instances exerts a potent influence in producing the very result that is most feared.

All attempts at using the voice must be prohibited during an acute recurring stage of any chronic throat inflammation and mild treatment should always be instituted immediately. Soothing sprays or cotton probe applications should be used appropriately, chosen according to the situation and character of the recurring attack, together with the usual hygienic and constitutional measures resorted to in acute catarrhal inflammations.

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FOREIGN BODY REMAINING WEDGED IN THE EXTERNAL  
AUDITORY CANAL FOR MANY YEARS WITHOUT INJURY  
TO THE EAR OR ITS FUNCTION.  
REMOVAL BY SYRINGING.

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Written for the Ophthalmic Record by  
H. B. YOUNG, M.D.,  
BURLINGTON, IOWA.

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The report of Dr. Spalding's case in the archives of Otology (July, 1891,) recalls a similar experience.

Mrs. A. age 25, declared upon coming into my office that she had had a small piece of slate pencil lodged in her right ear since she was five years old: that many unsuccessful attempts had been made to remove it: and that while it gave her no trouble she was uneasy about it and wanted it out. At the bottom of the canal in the little depression so common at the tympanic margin there was a dark mass which might be all cerumen. A stream of warm water quickly brought it all out and dissolving the cerumen left a piece of slate pencil about three eighths of an inch long.



There was no noticable defect in the hearing, either before or after the removal of the mass : and there was not the slightest trace of irritation in the tissue so long in contact with the foreign body.

The other ear was quite deaf, the result of a neglected chronic otorrhoea, which was not then, but liable to be at any moment, in active ebullition.

It is perhaps worthy of remark that I got extravagant praise and a good fee for my skill (?) in removing the foreign body while no attention was paid to my advice about the trouble in the other ear.

# THE OPHTHALMIC RECORD.

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## DESCRIPTION OF THE OPHTHALMOMETER

OF JAVAL & SCHIOTZ (MODEL 1889).

Written for the Ophthalmic Record by

FRANK W. RING, A.M., M.D.,

NEW YORK, N. Y.

The ophthalmometer of Javal and Schiotz serves to measure the radius of the curvature of the cornea. It also measures the corneal astigmatism. The different measurements are made by observing the corneal images of two movable reflectors upon an arc of a circle. These images are observed by means of a telescope which contains a double refraction prism. The whole is placed upon a planchett terminated by a head-rest.

### THE ARC OF THE CIRCLE.

The arc which carries the reflectors is a quarter of a circle of which the interior radius is 290 mil. When the instrument is focused, the arc is concentric with the observed cornea. The exterior border of the arc is divided into degrees of a circle. Upon the right side of the interior border of the arc there is a division which indicates the dimensions of the radius of curvature in mil.

The arc is fixed to the telescope by means of a brass ring, held by two screws, which adjust the telescope to a proper plane of the prism, therefore these screws must not be tampered with.

## THE REFLECTORS.

There are two reflectors upon the arc. The rectangular one measuring 60 by 30 millimeters, which is always fixed at 20 degrees on the left arm of the arc. The graduated one glides upon the right arm of the arc, and has little steps, or stairs, 5 by 10 mill. Each step indicates one dioptric. This reflector must glide easily upon the arc, which it can be made to do by pressing or elevating the elastic metal which clamps it to the arc. The black velvet square can be easily drawn from the frames to be cleaned.

## THE DISKS.

The diameter of the keratoscopic disc is 640 mill. In order to obtain a sufficient light to illuminate the reflectors when the arc is in a vertical position, one must give the disc an inclination of 20 degrees to the vertical. Upon the disc are traced some concentric circles and some lines which form a double system of parallels and meridians like those upon a geographic chart. Seen from the point occupied by the observed eye, the circles appear equidistant because their rays cross according to the law of tangents. The center of the disc having been pierced, in order to make room for the telescope, the enumeration of the parallel circles commences with the figure 5; it stops at 45 degrees. In consequence, the entire disc occupied by the observed eye has an extent of 90 degrees. The circles are designed in white upon a black ground; those of 15 and 30 degrees are thicker than the others, and show very distinctly upon the corneal image. The little black figures inscribed upon these circles serve to enumerate the meridians from 0 to 360. The white figures shown upon the long radii up to 45 degrees, serve to show in degrees the parallel circles. This double system of graduation gives a point of fixation to the observed eye, so that an observation may be made useful outside of the visual line. It can also be used instead of a perimeter.

Upon the border of the disc, between the circles of 40 and 45 degrees, a large white crown carries a division in degrees with figures at every 15 degrees. These figures are reversed upon the disc, in order that they may appear upright upon the corneal image. Instead of going from 0 to 360 degrees like the little

black figures, they repeat themselves twice from 0 to 180 degrees. Upon the horizontal diameter of the left side of disc, one sees the figures; 35, 40, 45, 50, dioptries. When by the one half reduction of the corneal images, the parallel circles so enumerated become tangents to themselves in whatever meridian, these figures indicate the force of refraction in dioptries of the cornea in that meridian. Upon the same horizontal diameter, upon the opposite side, one reads the figures, 3, 4, 5, diameter of the pupille, which serve to measure the pupil, provided the iris of the observed eye is sufficiently lighted, the number of the circle which coincides with the pupil indicates the diameter of the pupil in millimeters.

#### THE TELESCOPE.

The optical system is composed of two objectives, between which is placed a double refracting prism of Wollaston, with a positive ocular of 56 dioptries, and cross wires. The whole objective system can be withdrawn by unscrewing the black cone in front of the telescope. The two objectives are indential: the diameter of each is 40 mill. and focal distance 280 mil. The position of the cross hairs is such that the focussing of the telescope attends to itself. The re-doubling given by the birefracting prism of Wollaston is 2.95 mill. for the distance where it is placed from the observed eye. The exactitude of the re-doubling and the gluing of the prism is done by a special mechanism, and verified by an ingenious instrument which Mon. Laurent has made for the purpose. The objectives may be cleaned by unscrewing the black cone, the prism can be reached in the same manner, but it is rarely necessary to touch the prism or objectives. The ocular is easily removed for cleaning. Divisions are traced along the slit in which the screw runs. These divisions correspond each to a displacement of one mill. of the ocular, and each mill. corresponds to a variation of three dioptries of the eye, of the observer. So an emmetrope at 0, or the first division, would require it at the second division if he were myopic six dioptries. If the movement of the telescope in its socket is too easy, remove it and wipe the bearings; if it moves too hard, drop a little watch oil on the cylinder. The brass slots and plates on the planchette is, of course, for the

tripod to glide upon; the set in front is used when a one-half less doubling of the image is desired, and this is effected with another objective, which is only sold on a special order. This objective is useful on dark days, and also for certain very precise measurements of the cornea. It is well to slip the instrument forward into these slots when not in use.

#### “LA PLANCHETTE”

Is the flat board upon which the ophthalmometer rests. If the movement of the tripod becomes harsh, it is only necessary to apply a little vaseline to the slot and brass plate.

#### L'APPUI-TETE

Is the head-rest, to which the illuminating tubes are fixed; it also gives support to the chin-rest.

#### INSTRUCTION FOR THE EMPLOYMENT OF THE OPHTHALMOMETER.

It is well to commence the use of the instrument upon the artificial eye. This eye is of metal and is fixed to the chin rest. I will first describe the method upon the artificial eye, and afterward the modifications upon living subject.

#### A. POSITION OF INSTRUMENT.

The ophthalmometer should be placed upon a table of the usual height, with a width of 0.60m and a length of 0.80m (this size is very necessary to avoid against a shock to the disc in passing near the table). It is well to have the table upon castors, so that it may be moved to and from the window. The observer sits upon a stool about 0.30 metres high.

#### B. ILLUMINATING.

The light must be as abundant as possible. The dimension of the disc protects the observer from being dazzled by light. For natural light place the instrument as near as possible to a large window. It is well that the window pane should be of ground glass from below to a height of 1.40met. It is necessary in winter and useful in all seasons, to have curtains which may be raised at will. In an office which is not shaded by neighboring houses one can use the ophthalmometer with sufficient precision, even in winter. A good light gives an accuracy which exceeds  $\frac{1}{4}$  of a dioptric. In certain exceptional dark



days, or in the evening, one can use the instrument with artificial light. If you have at your disposal the electric light, it is well to procure a special reflector, mounted with two incandescent lamps of 24 candle power each.

#### C. FIRST POSITION. (PREMIER TEMPS.)

First of all, turn the ocular until you distinctly see the two hair lines in the telescope. Draw toward yourself as far as possible the ocular, without losing sight of the threads. The focusing in pushing, implicates an effort of accommodation; and you will have no precision in measuring the radius of curvature and will fatigue yourself uselessly.

For each observer, the ocular must always remain in that position to which it belongs, before each examination, if it has been removed from it. Place the plain reflector at 20 degrees on the brass arc, the graduated reflector at 25 on same. Sight through the V shaped notch over the telescope, for the observed eye, draw and withdraw the instrument until you get a clear image, use the screw for depressing and elevating the instrument. One now sees delineated upon the eye two discs, one encroaching upon the other. First. A graduated white reflector, traversed by a black line. Second. A rectangular white reflector traversed by a black line. You take account of the central reflector, neglecting those which are delineated upon the outer border of the disc, which should be seen if the instrument is well centered.

#### D. SECOND POSITION.

If the eye examined is astigmatic, the two lines upon the reflector will not be coaptated, make them continuous by turning the telescope from left to right, then carefully make the contact of the two reflectors by pushing the graduated one on the brass arc. After doing this be careful that the instrument is not moved. Now read the figures indicated by the long index, also the same (90 degrees removed) indicated by the pointer on the graduated reflector. Turn carefully from left to right the telescope until the long index registers that which the graduated pointer stood at in the beginning. If after this movement you find the graduated reflector overlapping the

rectangular one, you have astigmatism *according to the rule*, that is to say; *the meridian of greatest refraction* is vertical, or approaches the vertical;—You read the number of overlapping steps for the dioptries of astigmatism; also the fractions of steps, for fractions of dioptries; which gives you the degrees of astigmatism. As for the position of the meridian, it is given by the figures marked by the needle of the reflector in the second position, or the long index in the first position, for the artificial eyes, which are concave.

If the reflector instead of overlapping, draws away from the other, you have astigmatism, *against the rule*. The meridian of the most refraction is horizontal or in the vicinity of horizontal. In this case, the meridian is obtained approximately by means of the two little white squares seen on the reflector, but the measure so made is inexact, on account of the chromatism of the apparatus (the prism of Wollaston cannot be made achromatic). It is therefore necessary to establish the connection in the second position of the arc, and then bring it back to the horizontal and read the steps overlapping correctly.

#### POSITION OF THE INSTRUMENT.

The ophthalmometer being placed on a firm table, the patient if an adult of ordinary stature, is placed close to the instrument in a chair of common height. A child may be raised or held in its parent's lap, of course, the chair will be placed back to the source of light, if it is not artificial light. Usually the chin-rest remains in the second notch. For large heads it may be dropped to the first notch. For children, raised to the third or fourth notch. In order to assure the stability of the head, see that the brow rests upon the superior portion of the upright, look to the perfect horizontality of the eyes. If the patient moves during the examination, it is absolutely necessary to commence anew. In nervous patients (children, nystagmatics, photophobes) it is well to dilate the pupil with cocaine, by so doing you make an excellent examination of eyes which seem absolutely rebellious to an examination.

In the case of irregular astigmatism, the direction of the reflectors may be variable, their borders jagged, and the straight lines sinuous. It is rare that one cannot get an approximative

levelling. If the reflector, or straight lines assume irregular forms, ever so little, it is indispensable to regard the keratoscopic disc, and see if the three circles of that disc are regular and concentric. It is thus, that one makes the diagnosis of irregular astigmatism, and strong decentration of the cornea.

At the moment of turning the instrument to the second position (arc vertical), warn the patient to look steadily and not let his eye wander, open wide the eye, that the lashes may not obstruct the rectangular reflector. If the eye moves begin again. In irregular astigmatism the line of encroachment will not be clear, but you will be able to obtain it very nearly, and this approximation will render very appreciable service to the patient. The reading of the figures on the disc may be difficult unless you have a very good light, the focussing not being the same for the reflectors, and the circumference of the disc. It will be necessary to turn the instrument a little in order to use the figures. If a portion of the disc is obscure, it may be that the eye of the patient is too near the contour of the window of the upright. It often happens that the nose of the patient shades the image of a portion of the crown of the disc, forming itself upon the cornea. If this proves annoying, a slight rotation of the head of the patient upon its vertical axis, will remedy it.

#### RESULTS.

The Ophthalmometer gives :

1°—The axis of the principle meridian, the most refracting of the corneal surface.

2°—The degree of astigmatism.

When the astigmatism exceeds two dioptries, you may be certain of being within 5° of the true meridian, or axis. When the astigmatism is slight, you may have a possible error of 10°, very acceptable with glasses less than one dioptrie, while the same error would be intolerable for strong lenses. With the model of 1889 the precision is much greater. In the case of strong astigmatism, you may observe to within 2° of the axis. Make your first reading with the long needle in the first meridian and second reading in second position with one of the short needles ; write them both ; if the readings so obtained are not identical, you have observed badly, the patient has moved, or

the meridians are not perpendicular, and should be noted. When one operates well the error should be less than  $\frac{1}{4}$  of a dioptrie.

Sometimes it is indispensable to make a subjective examination for the following reasons:

1°—Subjects who have a large amplitude of accommodation often will not accept the full correction of their astigmatism, because they have been in the habit of correcting it by a partial contraction of the ciliary muscle.

2°—The instrument measures well the corneal astigmatism, but experience proves that the result of the subjective examination often differs from that of the ophthalmometer, in the following proportions:—In weak astigmatism according to the rule, the ophthalmometer is from 25 to 50 dioptries stronger than the subjective measurements with atropine. In strong direct astigmatism it may be weaker by 0.5 to 1.0 dioptrie. In astigmatism against the rule, the ophthalmometer is always too weak by from 0.25 to 0.75 dioptries. When you find no astigmatism with the ophthalmometer, it is very probable there is a real astigmatism against the rule from 0.25 to 0.5 dioptries. This is due to an anatomical disposition, i.e., an inclination of the crystalline lens, shown by Tscherning in 1889, producing an astigmatism of the crystalline which necessarily modifies the corneal astigmatism. Javal affirms, that as a general rule, in the case of adults with strong astigmatism, the crystalline is deformed in the same plane as the cornea, and that the corneal astigmatism differs little from the total astigmatism.

#### SOME REFLECTIONS.

1°—Weak degrees of corneal astigmatism escape a subjective examination, during the period when the ciliary muscle is capable of compensation.

2°—In some subjects weak degrees of astigmatism appear as hyperopia

3°—The continual use of cylindrical glasses corrects the asymetry of the cornea, modifies very sensibly the state of migraine and sometimes give a complete and durable cure.

4°—A notable proportion of cases of astigmatism “against the rule,” exist in glaucoma.

5°—All eyes possessing a crescent are astigmatic.

6°—The direction of this lesion is always in a plane parallel to one of the principle meridians, the most often in that which presents the minimum of refraction.

7°—In astigmatic cases “according to the rule” (vertical) the crescents are external.

8°—In astigmatics “against the rule,” (horizontal) the crescents are vertical.

N. B.—These notes were selected and compiled from the “Memories D'Ophthalmometrie by E. Javal,” also from personal conversations with Tscherning, Bull and Javal.

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## OUR PUBLIC INSTITUTIONS AS SOURCES OF IMPAIRMENT OF VISION.\*

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BY J. A. LIPPINCOTT, M.D.,  
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As many of you are aware, a good deal of thought has been lately directed to the extent and the causes of blindness in this and other countries, with the view of removing the latter and thus lessening the former as far as possible.

At the last meeting of the American Ophthalmological Society, Dr. Howe, of Buffalo, as chairman of a committee previously appointed to investigate the causes and prevention of blindness, presented a report which appeared to establish the fact that, in this country, the number of the blind is increasing in far greater ratio than the number of inhabitants. For example, in

\* Being the address on Ophthalmology, read at the recent meeting of the Pennsylvania State Medical Society.



1870 the census showed a population of 36,558,371, of whom 20,320 were blind, while the census of 1880 showed a population of 50,155,783, of whom 48,929 were blind—*i. e.*, whereas the population during the decade increased 30.09 per cent, the increase in the number of the blind amounted to 140.78 per cent. While great allowance may be made for inaccuracy in the figures furnished by the census reports, especially that of 1870, we are probably justified in concluding, with Dr. Howe, that blindness is increasing out of proportion to the increase in the population of the country.

It is an unpleasant but indisputable fact that a very large proportion, probably a majority, of the blind have become so through the agency of communicable, and therefore largely preventable, forms of ocular disease. I allude to the various forms of contagious conjunctivitis, including ophthalmia neonatorum, and granular and purulent inflammation of the conjunctiva. The former of these diseases, ophthalmia neonatorum, has, in the State of New York, been considered grave enough to warrant special legislation, compelling midwives and nurses "to report all cases of redness and inflammation of the eyes occurring within two weeks after birth to the nearest health officer, or to some legally qualified medical practitioner." In view of the number of children annually deprived of sight by the purulent conjunctivitis of infancy, the propriety of our own State enacting a similar law can scarcely be called in question.

Whether we endeavor to secure legislation bearing on the subject or not, it is plainly our duty as physicians to prevent, by every means at our disposal, the appearance of a malady so destructive to vision. Among such prophylactic measures may be mentioned disinfection of the parturient canal before parturition, and, immediately after it, thorough cleansing of the infant's eyes with a mild antiseptic such as a saturated boric acid solution, or even the instillation of a drop of a two per cent solution of nitrate of silver, as suggested by Crede.

But while the subject just referred to is of so much importance as to demand at least a passing allusion, the more immediate purpose of the present paper is to consider the possibility of

lessening the evil effects attendant upon another of the causes of blindness, viz, granular conjunctivitis or trachoma.

Zehender states that in Finland in 1868 the blind were in the proportion of one to three hundred and forty-eight of the population, and that the most frequent cause was trachoma. Haynes-Walton says that granular conjunctivitis is the most common cause of blindness in Ireland. According to a recent estimate, about 8 per cent of the blind in the State of New York owe their unhappy condition to trachoma; but this statement by no means gives an adequate idea of the malignancy of this affection, because, apart from the consideration that the estimate is probably too low, many cases of blindness being credited to ulcerative and other corneal affections which owed their existence to trachoma, the gravity of the latter disease consists not only in its tendency to produce total blindness, but in the fact that recovery from it is rarely if ever complete. The patient is left with cicatricial and shrunken conjunctivæ and with tarsal cartilages incurvated, or at least with the lids inverted, causing the lashes to rub and fret the cornea. The latter rarely fully retain or regain their pristine lustre. The upper lids droop, and the patient acquires a peculiarly dejected look which seems to express a dreary acquiescence in the decrees of a relentless fate. It is rare to see a person, who is or has been affected with trachoma, capable of a smile in the full and joyous sense of that word. Besides, even when the disease has been apparently obliterated, very slight provocation is needed to light up new trouble, especially in the shape of corneal ulcers which are apt to prove exceedingly painful and intractable. Once, therefore, the affection has secured a foothold, the patient is more or less seriously crippled for life.

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*Etiology.* Trachoma, like most forms of conjunctivitis, is undoubtedly contagious. It is communicated through the secretions, and is, therefore, more readily propagated when active inflammatory changes are in progress. It is not generally believed that the secretion from a trachomatous eye will necessarily produce trachoma; certain favorable conditions must be present.

As in the case of other communicable diseases, the tendency

is to ascribe to some form of micro-organism the chief role in the development of granular conjunctivitis; and laborious bacteriological investigations have been carried on by a number of observers, with results, however, which up to the present time, so far as my knowledge extends, are far from satisfactory. Sattler, one of the highest authorities in this field of research, discovered a micrococcus which appeared to be the active agent in the production of the malady, and his discovery was apparently confirmed by Michel. But Sattler, in a later communication read at the Heidelberg Congress three years ago, acknowledged it to be very questionable whether, after all, this micrococcus was the morbid factor, although he felt assured that it had a certain relation to the morbid process. In the discussion which followed this paper, Schmidt-Rimpler corroborated the above conclusion.

But if the active cause, the *causa causans*, of trachoma is still uncertain, the predisposing causes are pretty clearly established. They have reference to age, race, locality, and general hygienic conditions. Children under five years of age are generally exempt, as are also the aged, the disease being seen most frequently between the ages of twenty and forty. The investigations of S. M. Burnett tend to show a singular immunity on the part of the negro race. The recent attempt of Chibret to demonstrate a similar exemption in favor of the Celtic race can scarcely be regarded as successful, in view of the statistics of the *Ophthalmic cliniques* in this country. That the Irish at home do not exhibit any greater freedom from the affection than they do here, is evident from the remark quoted above from Haynes-Walton in reference to the part played by trachoma in producing blindness.

It has long been a matter of observation that altitude and topography bear an important relation to the etiology of granular conjunctivitis, mountainous regions, like Switzerland, furnishing but few cases, while low flat countries like Belgium are peculiarly prone to the malady.

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The disposition to trachoma is found among the very poor, and is mainly due to bad, insufficient, or unvaried diet, imperfect ventilation, and inattention to personal cleanliness. The

most favorable conditions for its development are realized where people are crowded together in tenement houses and barracks, and in large schools and orphan asylums, where the food, though possibly abundant and good in itself, may lack variety, where the ventilation, especially of the dormitories, is frequently utterly inadequate, and where, owing to the necessarily free communication between the inmates, contagion, in the event of an infectious disease being admitted unrecognized, finds so favorable a field of operation. How easily a case of trachoma can effect an entrance into such institutions is obvious when we consider the frequent want of correspondence between the external appearances and symptoms and the conjunctival changes found on careful examination.

Once admitted, the disease finds abundant means to spread; but its most faithful and efficient ally is undoubtedly the common towel, by which, in the words of the *London Times*, "a contagious discharge is no sooner wiped out of the eyes of one child than it is wiped into the eyes of another." So that an article, which might serve as the banner of civilization—which, as an instrument of cleanliness, is indispensable to health and comfort, "strained from that fair use," becomes a source and means of incalculable mischief.

The propagation of granular conjunctivitis in this country is effected, in my opinion, mainly through two agencies; first, immigration, and second, our orphan asylums and schools and kindred institutions.

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The proportion of trachomatous to other forms of eye disease is twice as great in the city of New York as it is in Boston, and nearly three times as great as in Philadelphia.

This great disparity, although doubtless caused in part by the maleficent influences inseparable from tenement house life which obtains on such a large scale in New York, is, in my judgment, mainly due to the fact that that city first receives the great bulk of the immigrants that come to our shores. The average annual immigration through the port of New York for the past five years was 352,734, while the average for the same period for Boston was 34,228, and for Philadelphia, 27,991.

But if the interest of the people of the empire State is greater than ours in the rigid examination of immigrants with the view of lessening the spread of contagious eye diseases, our interest is great enough to demand attention, and besides, the day is past when we can take a purely local view of any question affecting the public weal. We have one flag and one country, and the interests of one portion of it are the interests of all.

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The other source of chronic contagious conjunctivitis to which I have referred is to be found in our orphan asylums and similar institutions. Years ago, when I was a resident surgeon at the Wills Eye Hospital in Philadelphia, there was one town which had a bad pre-eminence as a source of an unfailing supply of granular lid cases: insomuch that even the hospital attendants, on recognizing as they often could before the patient entered the house, the drooping lids and the other appearances characteristic of the disease, used to remark "here comes a case from X——." Similarly, for a number of years I have been in the habit of inquiring of trachomatous children what orphan asylum they had lived in. I have in fact been so impressed with the importance of this subject that when I was asked to appear before you in my present capacity it seemed to me that it would be difficult to choose a topic more worthy of your attention.

In order to acquaint myself with the facts, I have recently examined the eyes of 1,285 inmates of seven public institutions in Western Pennsylvania. The ages ranged from infancy to 18 or 20 years, the vast majority being from 5 to 15 years old. Among these children I found 96 well marked cases of trachoma, using that word in the narrow sense in which it is employed by Sæmisch. The ages of the affected cases were as follows:

Under 5 years of age, none.				
5 to 6	"	"	"	9 cases.
7 to 9	"	"	"	34 "
10 to 12	"	"	"	29 "
13 to 16	"	"	"	14 "
17 to 19	"	"	"	12 "
Total, - - -				96



In a majority of these cases the external appearances were such that, without everting the lids, the existence of serious trouble would never be suspected. Furthermore, in a majority of the cases no difficulty was complained of. The latter fact is owing in part to the toleration established by the chronicity of the disease, and in part probably to the melancholy patience so characteristic of the inmates of orphan asylums.

Among the thirty children in the Home for Colored Children trachoma was wholly absent, whereas follicular conjunctivitis of a mild type was common, facts which seem to corroborate the view that trachoma and follicular conjunctivitis are distinct affections. They also, so far as they go, tend to confirm the conclusions of Burnett in respect to an immunity possessed by the colored race. It is to be remarked, however, that in another institution, which opens its doors to all races, two well marked cases of the disease were seen in full blooded negroes.

In one institution, containing 296 children about equally divided between the two sexes, there were 41 cases, of whom *all but one were girls*. If one were disposed to generalize from this fact as to the causal influence of sex, his conclusions would be somewhat disturbed by the circumstance that in another institution containing 465 inmates there were 35 cases, *all but three of whom were boys*. In the latter institution, it is true, the boys outnumbered the girls nearly four to one, but, taking this into account, the relatively large number of male cases is quite striking. In point of fact, among the 96 cases the sexes were about equally represented, the girls numbering 52 and the boys 44. How are we to account for the remarkable statistics furnished by these two institutions? In each the predisposing causes, including the diet and the general sanitary conditions of the two sexes, are the same. There is but one explanation: in the one instance a particularly infectious case happened to gain admission to the female department, and in the other a similar case happened to be admitted to the male department. The statistics in reference to trachoma presented by these two institutions amount, in my opinion, to a demonstration that, while predisposing influences may be necessary, there is practically but one way in which the disease spreads, and that is by con-

tagion. *Omne ex ovo* is an old statement, but it is a fair expression of the tendencies of modern medical and biological opinion. I am disposed to emphasize this point because some writers apparently exhibit a tendency to minimize the contagiousness of granular conjunctivitis, and to dwell upon the importance of the indirect causes mentioned. Zehender, e. g., says that, given the predisposing conditions plus the chance of contagion, trachoma may appear in a previously healthy eye.

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From the foregoing considerations the conclusion is fairly deducible that it is possible to lessen the ravages of a disease which is followed by such disastrous consequences, and that one way of accomplishing so desirable a result is to employ such means as will tend to eliminate it from those of our public institutions, which offer a peculiarly favorable soil for its propagation. The measures taken for the attainment of this end must have reference, first, to the rigid exclusion of all new cases, and second, to the prevention of the malady where it has already effected an entrance.

With regard to the first of these objects, systematic inspection of all new applicants is essential. Such inspection would naturally be more effective if conducted by a physician. But if the demands upon the time of the latter, whose services in such cases are usually gratuitous, should prove too exacting, it would be perfectly feasible for any man or woman of average intelligence to acquire in a very short time all the knowledge and skill required for the purpose. In all institutions of the kind alluded to in this paper *one or more of the attendants should be instructed how to evert the eye lids*, and to detect a departure from the normal condition. Applicants presenting any such departure should be set aside to await medical examination. In reformatory schools, which are more or less penal in character, the rejection of those affected with trachoma would probably be impracticable, and it might be attended with difficulties even in the case of orphan asylums. Granting this, the necessity for the careful examination of new comers before admitting them is no less imperative, in order that steps may be taken to prevent the contamination of healthy individuals.

As to the second object, the limiting of the disease where it exists, absolute isolation of the affected cases is indispensable. The play-ground offers ample opportunities for direct contagion; and, especially during the cold months, the pent-up dormitory air may contain, among its other abominations, abundance of trachoma germs which may have passed through the tear passages into the nasal chambers, and thence have found their way out with the exhalations. The general ignorance of the first principles of ventilation, even on the part of persons of otherwise fair intelligence, is truly appalling. Hence most of our churches, theatres, and lecture halls seem intended to provide "an easy method" of enabling us to breathe over and over again the emanations from our own and our tuberculous neighbors' lungs. Even in some of our hospitals the patients, in the winter season, must either breathe air that is saturated with germs of disease and odors unspeakable, or be exposed to cutting drafts from open windows which may change the road to convalescence into "the way that leads down to death." Small wonder, then, that the poor waif in the orphan asylum, who, perhaps, should thank his stars that he has a roof over his head, does not enjoy the benefits of scientific ventilation. In some asylums, under existing arrangements, segregation of the affected cases would be extremely difficult on account of their crowded condition. Unfortunately these are the institutions where the failure to adopt this measure would be attended with the most serious results. Some way must be found, therefore, of surmounting the difficulty.

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*Conclusions.* 1. Blindness in this country is increasing out of proportion to the increase in population.

2. Granular conjunctivitis is an important factor in producing impairment of vision.

3. Granular conjunctivitis is a contagious disease, and its dissemination is effected largely through the agency of orphan asylums, orphan and reform schools, and similar institutions.

4. Granular conjunctivitis can be excluded from institutions in which it has not already gained a foothold by rigid inspection (including systematic eversion of the eyelids) of all new appli-

cants. This inspection might, in the absence of the physician, be made by a special trained lay attendant.

5. The further spread of granular conjunctivitis in institutions where it exists can be prevented by absolute isolation of infected cases, and by the allotment to each individual of a towel for his or her exclusive use.

6. In every institution of the kind above referred to, examinations of *the eyes of all the inmates*, preferably by a specialist in eye diseases, should be made at stated periods, not less frequently than twice a year.

7. In every institution each child should have his own towel *and use it alone*, and appropriate penalties should attend infraction of this rule.

8. The efficacy of the above measures will be greatly enhanced by close attention to general sanitary requirements, including adequate ventilation, personal cleanliness, as varied diet as possible, etc.

9. The means suggested above will be found useful in the elimination of other contagious, though less serious, eye affections, such as follicular and catarrhal conjunctivitis.—*Pittsburgh Medical Review*.

## HOW SHOULD CATARACT OPERATIONS BE PERFORMED?

*Read in the Section of Ophthalmology, at the Forty-second Annual Meeting  
of the American Medical Association, held at  
Washington, D. C., May, 1891,*

BY JULIAN J. CHISOLM, M.D.,

Professor of Eye and Ear Diseases in the University of Maryland,  
and Surgeon-in-Chief to the Presbyterian Eye, Ear and  
Throat Charity Hospital of Baltimore.

That the technique of cataract operations is the most important element in success, no ophthalmic surgeon questions. Every improved step in the removal of an opaque lens has advanced the percentage of cures, until failures are the very rare exception, to a generally acknowledged fact that cataract extractions, formerly so fatal to the eye, have become the most perfect of surgical procedures.

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The ideal cataract extraction seems nearly attained by the methods now adopted. Asepsis and antiseptics have largely brought this about. To have absolutely clean instruments, as well as sharp ones, is a very important integral part of the work. There was a time in my early experience when every cataract patient had to be especially prepared by days of medication and dieting before they were made fit, or as we now see it, before they were made unfit, to undergo the operation of extraction. The instruments used were considered in good order provided there were no rust spots upon them. Our present knowledge, that invisible pathogenic germs introduced into wounds by bright instruments excite destructive inflammation; also that active purgation is not the universal panacea for re-establishing or maintaining health, has revolutionized the work of the ophthalmic surgeon. He now devotes more time to the purification of his instruments, his hands, and the eye to be operated upon, and less to the disturbance of the healthy natural condition of his patient. At the present time, most of my cataract extractions are made on the



day that the patients present themselves for treatment. In hospital practice, they are sent from the free dispensary to the operating room, a warm bath in transit, for general cleansing purposes, being the only preparation made. My method of cleansing instruments is to plunge them into boiling water. I prefer this to soaking them in a carbolic or a boric acid solution. I find the boiling water the most speedy antiseptic or aseptic treatment, without detriment to the cutting quality of the instruments. After the instillation of a 4 per cent. solution of cocaine for five minutes, I wash the eyeball with a stream of sublimate solution, 1-4,000, and attribute more benefit to the thorough cleansing of the conjunctival surface by water thrown from an irrigator than by the momentary action of the mercurial solution. I consider this more asepsis than antiseptis, and would place as much confidence in a stream of unmedicated water that had recently been sterilized by boiling.

A properly made wire speculum seems to me the ideal method of keeping the lids apart. The instrument should lie flat to the temple, and should make no pressure upon the eyeball. All eye specula by no means carry out these indications. Some use the speculum only to complete the corneal section. I prefer keeping it in place from the beginning to the end of the operation.

I also use the fixation forceps until the lens is extracted. I feel that the eye is safer by so doing. Some use the forceps only to aid in the corneal section, and trust to their control of the patient during the remaining and important steps of liberating the lens. This always seems to me a needless risk. With many patients the eye will involuntarily roll up suddenly at a most inopportune moment, when instruments are within the eye chamber. Unless extreme vigilance and great dexterity is used to anticipate these eye movements, serious injury to the eye will occur. As against this confidence in the patient's ability to keep the eye quiet, I find the judicious use of the fixation forceps a better guarantee against accident.

By nearly universal consent, the corneal wound is made under the upper lid, and is restricted to the clear cornea, although the puncture and counterpuncture are placed in the limbus, where the white sclerotic overlaps the clear cornea. This is done to

give width to the opening. The long, narrow, sharp pointed and keen cutting knife of Graefe is in universal use. To do all that is expected of it requires the constant care of a good cutler. In making the section, most surgeons follow the corneal curvature in a line just within the clear corneal boundary. The varied size of the opening through which the lens is to escape without squeezing the angles of the corneal wound, is secured by approaching more or less to the horizontal meridian in the transfixion. This needs experience and judgment to determine in advance, in each case, the size of the lens to be extruded. In making the corneal section some cut with the point of the knife, and then with the heel—a sawing motion. Others complete the entire section by making the point follow the corneal curvatures as the blade is pushed forward. These are peculiarities of the operator, and are non-essential, provided the knife is dextrously handled, and pressure is not made upon the iris by the blade of the knife in the to and fro movements of sawing. When an iridectomy is to be made, it is now generally agreed that the coloboma should be small. By seizing the iris near the pupillary border with the iris forceps, it is drawn vertically upwards. As soon as the pigmented pupillary edge is seen out of the corneal wound, this protruding portion of the iris is cut off by one snip of the scissors. This gives a comparatively small opening which will not be conspicuous, nor will it permit too much irregular refraction. The method of opening the capsule is still a mooted point. To tear off and take away the anterior surface of the capsule is undoubtedly the ideal method, as it does away with the secondary operations. With an iridectomy and a properly constructed forceps, this can be readily effected. When the iris is left intact, it requires nice manipulation to avoid including the iris in the blade of the forceps. In opening the capsule with the cystotome, much is said of the cutting properties of this diminutive blade, which seldom acts as a knife, but tears the capsule with its sharp point. Provided the rent is made large enough to let the lens out freely, it seems to matter little whether it be in triangular or in T shape. Either of these seems preferable to the horizontal cut over the upper edge of the lens, which leaves the anterior capsule to be disposed of by a

secondary capsulotomy some weeks after the extraction. The delivery of the lens is made either by curette pressure on the cornea, or by finger pressure through the lids, the speculum being previously withdrawn. When the patient can be relied upon to direct his eye as the operator desires, no great difficulty presents for finger manipulation. I, with the majority of surgeons, prefer to retain the speculum until the pupil is cleared of all lens substance. I find that when the corneal wound has been made to correspond with the size of the lens to be extracted, the pressure of a shell spoon below the ciliary border tilts the upper edge of the lens forward as well as starts its movement upwards, and delivery is accomplished by following with the spoon the lens as it advances. In the majority of cases, by spoon manipulation on the cornea all lens substance can be removed, even when the iris is left intact. When the lens seems to stick to the inner face of the iris, I have found much benefit in making pressure with the fixation forceps above the corneal wound. Beside keeping the eye quiet, it helps to direct the upper edge of the lens through the corneal opening. To get out fragments of lens which are disposed to remain notwithstanding spoon pressure, I have sometimes used the curette, as is constantly done by Galeczowski; or I have washed out the chamber, as is the constant practice of De Wecker. I do not find it necessary to use either of these methods habitually, as do those surgeons. I have found at times the forceps of great value in recovering fragments of thickened capsule. Recently, in one instance of capsule so thick that the effort of dividing it ruptured the suspensory ligament, I seized the capsule with forceps, and delivered the lens entire in capsule by traction. It was without iridectomy, and gave perfect final results. In another case, equally without iridectomy, with thick capsule which did not yield promptly to the cystotome, I drew out the entire capsule by forceps, and then by pressure removed the lens. There is no doubt but that a very important part of the ideal operation of cataract extraction is to leave the pupil clean of all lens detritus. This should be effected by patient, delicate manipulation, using curette, syringe or forceps, as the indication may demand. When iridectomy has been performed, it is important to have

the angle of the corneal wound freed from the presence of any fold of iris, and the spud should be used to dislodge any portion of this membrane which may have been caught in the lips of the wound. When no iridectomy is done, in the majority of cases, after pupil cleansing, the iris resumes its normal position with round central pupil. Should the pupil be irregular, or the iris tend to prolapse, it should be replaced *in situ* by smoothing it out with the side of the spud, using gentle lateral pressure on the face of the iris in the anterior chamber to release any pinching of the iris by the angle of the corneal wound. If the iris be injured in the lens exit, or a tendency to prolapse shows itself, it would be better at once to convert the operation into one with iridectomy, rather than run the risk of an iritic hernia after the final dressing is made. The cleansing of the corneal wound of any blood clot, and the removal of all lens detritus from the conjunctiva, complete the operation. If no iridectomy has been practiced, a drop of an eserine solution,  $\frac{1}{2}$  per cent. strength, is placed upon the cornea, otherwise the eye is ready for the permanent dressing. With the closing of the lids after a careful operation, at least nine-tenths of the dangers against a successful result have been already successfully met. In my professional experience it matters little how the eye is dressed, provided the upper lid be kept for a few days over the corneal wound, for its uniform support whilst healing, and provided no irregular pressure be made upon the cut eyeball by badly adjusted compresses, or by too tightly tied bandages. Experience has led me to adopt the lightest of dressing, and the avoidance of dark rooms. I feel also quite assured that we have all erred in inflicting too much bodily restraint, to the annoyance of our patients. To be sure, we get finally good eyes after carefully performed operations, when we keep patients in bed, on their backs in dark rooms; but we equally get good results in like proportion after carefully performed operations, when we do not treat them as bed patients. It is more the careful technique and not so much the after-treatment, that increases the percentage of cures. I am glad to say that I see a general relaxation from the rigid rules for dark rooms and bed confinement

in such universal use a few years back. I am sure that this rational change is for the good of both surgeon and patient.

The ideal extraction of simple senile cataract is undoubtedly without iridectomy, making a flap opening in the upper segment of the clear cornea, destroying, or better, removing the anterior face of the capsule, and getting rid of all lens detritus from the pupil. The operation of extraction without iridectomy is evidently growing in favor.—*The Journal of A. M. A.*

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## OPHTHALMIC THERAPEUTICS.

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Translated for the Ophthalmic Record by  
F. H. PRICHARD, M.D.,  
NORWALK, OHIO.

### PETROLEUM IN CONJUNCTIVITIS.

Dr. Trousseau, of Paris (*Revista Clinica de los Hospitales*, no. 5, 1891), communicated to the French Society of Ophthalmology his observations on the treatment of conjunctivitis. The nitrate of silver and sulphate of copper cause violent pain and active reaction and hence for the last two years he has been searching for a substitute. This he thinks he has found in crude petroleum, it having a marvelous action. It is less active than silver or copper, yet it has the advantage of causing no pain, determines no reaction and is well supported by even the most gravely affected corneas. He used the crude oil of the Caucasus. Its derivatives are less efficacious and more irritating. The oil should be applied to the palpebral and ocular conjunctiva by means of a camel's hair pencil. It should be well applied two or three times a day according to the intensity of the disease. After detailing the results obtained in each form of the disease he concludes as follows: Crude petroleum is a good modifier of conjunctival infections, is always well borne, and is especially indicated in children and weak persons, capable itself of curing



many cases of conjunctivitis it may pave the way for or terminate the treatment in other cases.

#### TREATMENT OF OPIIHALMIA NEONATORUM.

Dr. Schmidt-Rimpler (*Gazzetta Medica d' Roma*, 14, 1891), recommends chlorine-water as very efficacious in the first stage of the disease when the lids are rigid and tense and the secretion is scanty. Here the nitrate of silver, so useful, indeed indispensable, in the later stages, is contraindicated. A 20% solution of boric acid applied locally upon wads of cotton and changed every hour is also of service used together with the chlorine water. These applications had better be alternated, first chlorine water an hour, to be followed by a rest of an hour and then boric acid solution an hour. If the secretion becomes abundant and the conjunctiva softened a 20% solution of argentic nitrate may be instilled once daily. If it becomes extraordinarily profuse stronger solutions or even the nitrate of silver in substance is to be used. Otherwise frequent and profuse irrigation with a 20% solution of boric acid is sufficient.

#### PROPHYLAXIS OF OPHTHALMIA NEONATORUM.

Dr. Valude, of Paris, (*Gazzetta degli Ospitali*, no. 64, 1891), observes that Crede's method of instilling a 20% nitrate of silver solution into the eye of new-born children suffering from ophthalmia is by no means without danger; then again solutions of argentic nitrate alter easily. The writer recommends instead the use of iodoform in powder, which has no inconveniences. Used in 500 cases it has given excellent results, the disease running at the most a simple course. It is done as follows: before the cord is cut, the edges of the lids are washed with some antiseptic then raised and a little iodoform insufflated. This does not need be repeated.

#### PROGNOSIS AND TREATMENT OF INTRAOCULAR MALIGNANT TUMORS.

Dr. Lagrange, of Paris (*Gazzetta degli Ospitali*, no. 43, 1891), at a recent meeting of the French Surgical Society, considered the prognosis and treatment of intraocular malignant growths. It is often the custom to confound all malignant tumors of the

eye ball and call them carcinomata of the eye. The degree of malignity of these tumors varies according to various conditions, and from this diversity of prognosis results the most important therapeutic consequences. He divides the malignant intraocular tumors into three classes :

1. Melanotic sarcomata of the uveal tract ;
2. Leusarcomata of the choroid ;
3. Gliomata of the retina.

The melanotic sarcomata of the uveal tract are the most malignant of all tumors of the eye-ball, and, contrary to what is generally held, their malignity is greater than that of gliomata of the retina. The melanosis is certainly the particular agent to which these tumors owe their malignity. Generally they are situated in the choroid. In 195 cases of choroid melanosarcoma there were 75 rapid deaths, 25 died in six months, in the remainder there was more or less improvement. These are undoubtedly the most malignant of tumors, and in their treatment must evacuate the orbital cavity as soon as possible. Leusarcomata are more benign than the preceeding ones. In 35 cases the speaker obtained 11 recoveries after operation, and 10 deaths more or less rapidly following. In these tumors simple enucleation he considers sufficient.

Gliomata of the retina have been certainly exaggerated as regards their malignity. Out of 42 cases operated upon there were 14 with favorable results. Prognosis is not so dark as some would have it. Lucas Championniere is not of the opinion of the speaker and regards melanotic tumors having a malignity peculiar to themselves. Berger thinks that although the operation should not be performed too late, yet a certain number of melanotic tumors may go on to recovery, and cited a case operated on by him where there was no recurrence. Delcus does not think melanotic tumors recur with such rapidity ; he has operated on two cases and the tumor did not reappear. Lucas Championniere would regard melanotic cancers so malignant as not to justify interference. Tillaux thinks Championniere's opinion too exaggerated and carcinomata of the eye exceptionally rare. He cited two cases of melanotic sarcomata successfully operated upon. Finally Lagrange insisted upon the operability of these

tumors. In some cases simple enucleation is not sufficient but more extensive operation necessary.

#### TREATMENT OF REFLEX NEUROSES OF OCULAR ORIGIN.

Dr. Adelheim, (*Mercredi Medical*, No. 11, 1891), at the last Congress of Russian Physicians expressed the opinion that a large number of neuroses are due to defects of refraction, defective accommodation and disturbances of the eye-muscles. To wear the proper glasses is sufficient to improve and even cure certain neuroses, as headache, hemicrania, neuralgia of the trigeminus and other nerves, vertiginous attacks, spasmodic contractions of the facial muscles, etc. In such cases, if the patient lays off the glasses the neurosis returns. Neuropathologists should devote as much attention to the eye as they do to the ear, nose, genital organs, etc.

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## THE NEW OPHTHALMOLOGICAL SOCIETY.

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At an informal meeting held in St. Louis, Oct. 15, there were present in person and by proxy twenty Ophthalmic Surgeons. Dr. J. L. Thompson, of Indianapolis, was made chairman and Dr. G. C. Savage, of Nashville was made Secretary of the meeting. The meeting having been called for consultation—possibly for organization—no one present had drafted a constitution and by-laws. For this reason it was decided to defer organization until June 1892, when a second meeting will be held in Detroit, during the meeting of the American Medical Association.

Dr. H. B. Young, of Burlington, Iowa, and Dr. G. C. Savage, of Nashville, Tenn., were made a committee on constitution and by-laws, to report at the meeting to be held in Detroit. Dr. J. L. Thompson, of Indianapolis, Dr. X. C. Scott, of Cleveland, Drs. F. B. Tiffany and J. H. Thompson, of Kansas City, Dr. W. C. Eichelberger, of Terre Haute, Dr. A. Rhu, of Marion, Ohio, and Dr. Savage of Nashville, were constituted a committee to work in person, and by correspondence, in the interest of the proposed organization from now until the meeting in Detroit next June. Dr. Michel and others residing in St. Louis, feel an interest in the matter and would have been present at the informal meeting had it been held later in the afternoon as was first contemplated.

In the informal meeting there was but one answer to the

question "shall the new organization be local or national?" That answer was "national." Some names were suggested for the as-yet-unborn. The name that, to the writer, seems most suitable is "The American College of Oculists." This would show its national character and at the same time would forever distinguish it from the older national organization, The American Ophthalmological Society. With names so different the one could never get credit for any good work done by the other.

It is true that some good men look on this movement with disfavor, not that they believe it will be a failure, but because they believe it will work a detriment to the Section of Ophthalmology of the American Medical Association. Among these may be mentioned Dr. Leartus Connor, of Detroit, Dr. F. C. Hotz, of Chicago, and Dr. T. E. Murrell, of Little Rock. They will be allowed space in the Record, from time to time, for presenting argument against the proposed organization. The editor of the Record does not yield the point that to favor the new organization is disloyalty to the American Medical Association, or that the new organization will, in the least, injure its Section of Ophthalmology. On this point some argument has been presented in a former issue, and more will follow in subsequent issues.

"Is there a need for the new organization?" is a question asked by one. A single glance over the field of Ophthalmology ought to develope a strong answer in the affirmative. In round numbers there are engaged in Ophthalmic practice, in the United States, one thousand men. Of this number about one hundred belong to the American Ophthalmological society, and one hundred and twenty-two belong to the Section of Ophthalmology of the American Medical Association. To say that all, or even any great part of the remaining eight hundred are "goats" would not be true. There are many men who have done good and honorable work who are not members of either. There are many young men who have recently entered ophthalmic practice who will, in due time, be good material for ophthalmic organizations. It is, however, only a part of the design of the new organization to enlist men not already "in harness"; but it is expected that some who are members of the two old societies



will become members of the new, and yet retain their love for, and loyalty to, the old. These will have open to them another field for usefulness.

Can the oculists of this country do all the work that should be done by them in the three or four sessions, of three hours each, of the American Medical Association? The answer must be no. The work done at these meetings is good and the meetings must be continued. We should do more. A good number are already banded together under the name of the American Ophthalmological Society and are doing telling work. (While the statement published in a recent issue of the *Record* that their number was limited by a law of the Society is not correct, it is never-the-less true that the organization is, to a great extent, an exclusive one.) Some of these men are always in attendance at the meetings of the American Medical Association. Always they add zest to our meetings. More of them would attend regularly except for the memory of the Cleveland episode. Let this memory be faded by the lapse of time, then a larger number of the fellows of the Ophthalmological Society will come to the annual meetings of the A. M. A. In the mean time let those of us who are not of the American Ophthalmological Society band ourselves together in a new national organization, frame laws for our own protection and elevation, meet annually in the fall of the year and devote three or four whole days to scientific work.

As a mere suggestion the following thought is penned:—There should be in the new organization two classes of members, the one class consisting of reputable men who have been engaged in ophthalmic practice five or more years; the other to be composed of discreet and earnest men who have been engaged in ophthalmic practice less than five years. This latter class would be looked on as members on probation—as apprentices—to be admitted to full membership at the end of their “time,” on presentation of a clean record, and showing themselves possessed of knowledge and skill commensurate with their years. To every one thus admitted there should be given a diploma which should be, for him, perpetual evidence that he is worthy of esteem and confidence.

## Department of Otology, Laryngology and Rhinology.

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### CAMPBOR-MENTHOL IN CATARRHAL DISEASES.

Read before the Mississippi Valley Medical Association,  
October 15, 1891.

SETH S. BISHOP, M.D.

CHICAGO, ILL.,

Surgeon to the Illinois Charitable Eye and Ear Infirmary.

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While engaged in experimenting on an improved inhaler for catarrhal patients I observed that menthol crystals and camphor gum formed a clear, oleaginous liquid on coming in contact with each other. It occurred to me that such a combination ought to have a beneficial action in catarrhal affections of the nose and throat.

I mixed equal parts, by weight, of camphor and menthol, and combined the resulting fluid with lavoline in the proportion of twenty per cent of the former to eighty of the latter.

The first case I tried it in was one from which I had removed hypertrophied tissues from the right nasal cavity and used the cautery in order to open up the passage way not only for breathing purposes, but in order to facilitate the introduction of the eustachian catheter.

Before operating on the opposite nostril I had fallen upon this mixture and used it with such results as to render an operation on the left side unnecessary. After making one thorough application with the DeVilbiss atomizer I found the mucous

membrane blanched, the turbinate bodies shrunken, the canal considerably increased in size and the discharge diminished. The patient experienced decided relief from the stenosis.

At another treatment, on introducing the eustachian catheter through the nostril I had cauterized, its presence provoked a violent and protracted paroxysm of sneezing. This continued so persistently that it was impracticable to insert the inflator into the catheter. I managed to throw a spray of the camphor-menthol into the nostril containing the catheter. At once the sneezing stopped and did not return, so that there was no further difficulty in injecting remedies into the middle ear.

That experience led me to try it in nervous catarrh. I had just received a letter from a hay fever sufferer in Tewksbury, describing his satisfactory experience with menthol and liquid alboline inhalations which I had recommended last year.

The relief obtained by him, Prof. Lockwood and others by the use of menthol, and the fact that the presence of camphor appeared to intensify the effects of menthol, made it reasonable to suppose that this combination would afford relief in hay fever.

The first case in which I tried it was one of the early form. A spray stronger than ten per cent. of the mixture with ninety per cent. of lavoline produced sneezing and a temporary stenosis of the nostrils, followed the next day by increased freedom of respiration and a sense of nasal comfort. A five per cent. solution produced no sneezing or stenosis, but on the contrary left nasal passages very patulous for several days.

Another patient living in a suburban town began using camphor-menthol with lavoline just before the usual time for her attacks to begin, and enjoyed immunity from suffering by inhaling it two or three times a day. She is unfavorably located, being surrounded with the luxuriant vegetation of the country, and it speaks well for the remedy that it was able to keep the disease at bay. The last time she came for treatment she had been able to prevent the development of the paroxysms, although she had noticed occasionally some premonitory symptoms. She brought me some specimens of the ragweed in full blossom, and notwithstanding that she attributes her suffering every year to the pollen of this plant, she was then free from its effects.

One of my assistants, Dr. Hall, did not receive so much benefit from these inhalations. While they gave him temporary relief from sneezing and stenosis the symptoms would return again in a short time. In this instance the remedy was less effective than in any other in which I have employed it, but he used a twenty-four per cent. solution which is too strong for sensitive noses.

However, it is not to be expected that any single inhalent will prove equally successful in all cases. And the pathology of the disease leads me to believe that no local medication alone will ever prove completely remedial in hay fever.

Within the past few days ex-president Lockwood of the U. S. Hay Fever Association has written me as follows:

"You can very safely say some very good things for the camphor-menthol spray and inhaler. For twelve years I have been driven to the white mountains every summer on account of hay fever and I am used to expect a serious relapse on my return home. Last year this relapse was very serious and accompanied with severe asthma. This year I prepared the camphor and menthol and I had not more than started from the Jefferson station when the sneezing began, but I checked it at once with the inhaler. It was simply an ounce bottle with wide neck and glass stopper. My use of it and the comfort following were noticed by some fellow sufferers who understood well what it meant. A number of them used it freely with pleasant results, and that little bottle was the good genius of the journey.

"The heat and dust made our return to the city the most uncomfortable in twelve years' experience, and yet, to the surprise of myself and friends with me, this was the first time of my getting through a return trip with no hay fever or asthma, and it was due to the camphor menthol inhaling. In mild forms, or at an early stage of this malady, both spray and inhaler are very effective. Since my return home the heat, humidity and dust-laden air have brought the malady on again in great force, but the camphor-menthol greatly ameliorates my suffering. During this incessant day and night asthma the spray keeps the nasal passages open and so far its help is grateful to the asthma."

I take this occasion to pay a tribute to Prof. Lockwood's

microscopical researches and to his unceasing endeavors during the years of his presidency of the United States Hay Fever Association, to direct its work along the lines of scientific investigations concerning the cause and cure of hay fever.

Dr. B—, of Kansas, came to have me operate for opening up the nostril, and for ear treatment. It was impossible for him to breathe through the nostril, so greatly hypertrophied were the turbinates. To pass the smallest Eustachian catheter was out of the question. I succeeded in getting the effect of a twenty-five per cent. solution in the anterior and posterior nares, with the result of opening the canal in one treatment sufficiently to afford nasal respiration and sufficient space for catheterization.

Another treatment increased the freedom of respiration, and subsequent applications maintained the patulous condition of the nostrils, thus obviating the necessity of any operation with the knife, saw or cautery.

While writing these observations, an old college classmate, Mr. H. of Hutchinson, entered my office suffering from an attack of acute laryngitis. He was unable to speak aloud. I gave him two inhalations during the forenoon, first with a five per cent. solution, and later with the ten per cent. By the following morning his voice had returned with nearly the customary strength and smoothness. After one inhalation more his voice became normal, and all symptoms of laryngitis vanished.

One of my assistants, Dr. Collens, restored his voice from an enforced whisper to a good speaking condition in twenty-four hours by treating an attack of laryngitis with the inhalations varying in strength from ten to twenty per cent.

In hypertrophic nasal catarrh, with excessive and perverted secretion, a twenty-five per cent. solution, i. e. twelve and one-half per cent. each of the camphor and menthol, and seventy-five per cent. of lavoline, has checked the discharge, giving it a healthy character and restored nasal respiration.

I have had four assistants conducting experiments parallel with mine in private and hospital practice. The experiences of two have been briefly referred to. One of the others, Dr. Davey, reports having obtained results corresponding to mine, and the fourth, Dr. Campbell, compares the action of camphor-menthol



to that of cocaine, excepting the powerful anaesthetic effect of the latter.

The important point to be emphasized in the use of this, as well as any other potent remedy, is the choice of the proper strength in adapting it to each individual case in order to secure the best results. In chronic hypertrophic rhinitis in a person of dull sensibilities a twenty-five per cent. solution may be used with excellent effect, whereas, in the opposite extreme of temperament, in which the Schneideran membrane is exquisitely hypersensitive; a first inhalation stronger than the three, or five, per cent. solution may appear to act like an irritant.

I have injected a ten per cent. preparation into the Eustachian tube, which was closed so firmly that it was impossible to inflate the middle ear by the Valsalva, or Politzer, method, with the result of opening the tube so well that on the following day there was no difficulty in injecting remedies through it into the tympanic cavity. This has been a frequent experience.

No ill results have followed these injections into the middle ear. The presence of the liquid in the middle ear occasions sometimes a sense of fullness and temporary diminution of the hearing distance, but after its absorption the hearing improves and patients say their heads feel clearer.

I have applied the full strength camphor-menthol to eczematous eruptions and found that it relieved the pruritus and reduced the swelling and redness. It had a similar effect in herpetic eruptions.

Finally, camphor-menthol contracts the capillary bloodvessels of the mucous membrane, reduces swelling, relieves pain and fullness of the head, or stenosis, arrests sneezing, checks excessive discharges and corrects perverted secretions.

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INTRA-ORBITAL CYST, PROBABLY DERMOID IN  
CHARACTER WITH ACCOUNT OF TWO  
OPERATIONS FOR ITS CURE.

Written for the Ophthalmic Record by  
THOS. R. POOLEY, M.D.,  
NEW YORK.

Professor of Ophthalmology in the N. Y. Polyclinic, Surgeon in chief to  
the New Amsterdam Eye and Ear Hospital.

The occurrence of encysted tumors within the orbital cavity is sufficiently rare to warrant the report of the following case:— (Berlin, in his exhaustive treatise on orbital tumors in Gräfe-Samiesch, *Handbuch Der Gesamnten Augenheilkunde*, 6 Vol., p. 678, has collected seventy-three, all which he could find at the time of writing, 1880. For a clinical analysis of these cases as well as for further information of their structure, the reader is referred to this very complete and interesting chapter.)

Patrick O'Hara, aged 23, came under my care at the New Amsterdam Eye and Ear Hospital, Jan. 19, 1891, for advice about a tumor in the inner angle of his left eye, which he said had been first noticed by him as long ago as ten years. Its growth had not been accompanied by pain nor inconvenience of any kind, and he only sought advice on account of the slight deform-

ity occasioned by the swelling of the lid. By examination made on the day of his admission, the upper lid drooped at the inner angle and seemed to be swollen to such an extent as to effect the outlines of the inner canthus, and to prevent complete closure. On palpation the apparent swelling of the lid was found to be due to a tumor situated between the superior rectus and inner wall of the orbit which could be well defined in outline, and gave to the fingers a sense of deep-seated fluctuation. The eye ball was very slightly displaced downwards but there was no exophthalmos nor diplopia. The movements of the globe were not restricted. When the upper lid was drawn upwards and the patient bade to look strongly downwards, the tumor showed itself with great distinctness in the upper inner part of the conjunctival cul-de-sac. Ophthalmoscopic examination of the eye showed no abnormality of the fundus. The eye was emmetropic  $V = \frac{20}{xx}$ .

The same day I made an attempt to remove the growth through the cul-de-sac, the upper lid being retracted and partly everted by an assistant. I dissected the conjunctiva over the tumor with a pair of strabismus scissors, and succeeded by careful dissection, keeping close to the tumor which was protected by the finger, in carrying the dissection deep into the orbit. When near its apex, the sac of the tumor was opened and there was a sudden gush of yellowish-white, dirty, cheesy looking mater, (resembling the contents of an ordinary sebaceous tumor) but such as had in a degree undergone regressive change. An enormous amount of this substance was discharged by expression on washing out the orbit with an antiseptic solution. The conjunctival wound was closed by sutures. Immediately following the operation, and for the first few days there was hardly any reaction, and the conjunctival wound seemed to have healed and all appearance of the tumor to have gone—but gradually the swelling made its reappearance, and by pressure over the lid or by forcible retraction of the same, there was a discharge through the cul-de-sac of thin semipurulent character with flocculi of cheesy matter. Each discharge of fluid in this way, would be followed by refilling of the tumor. Jan. 27, the conjunctival stitches were removed. Cold applications were applied on account of the swelling of the lids which now ensued and a

pressure bandage applied each night. The wound was irrigated with a sol. of bichloride 1-500, and syringed out alternately with a sol. of the same kind and boracic acid. There was considerable ocular chemosis but no corneal inflammation. Under this plan of treatment the swelling subsided, there was no longer any discharge from the wound, and Jan. 31st the patient was allowed to go home—apparently almost cured. He continued his visits from time to time at the clinic, and after a period, in which a cure seemed to have been effected, there was a gradual return of the swelling in the same site which no longer communicated with the wound which had entirely healed, and in short the tumor not only returned, but was larger than before and produced more decided swelling and slight exophthalmos, and restricted to some extent the movement of the eye-ball in the direction from which it grew. Accordingly on May 5th, 1891, I undertook a more radical operation for its removal or cure.

With the patient under ether an incision about 5 cm. in length was made, extending from the external angular process of the supra-orbital ridge to the inner canthus. This incision was deepened by carefully dissecting close to the frontal bone, until the trochlearis muscle came into view, and then with a squint hook it was drawn to one side by an assistant and, to avoid any possibility of cutting it, kept in view during the whole process of the operation, and the incision was now carried into the depths of the orbit. From this point on the scissors were mainly employed, and an attempt made to enucleate it from the surrounding orbital tissues. While in this way cutting round the sac of the tumor, the sac either from pressure or by cutting, was opened and a large quantity of thin pus mixed with disintegrated cheesy matter discharged. All attempts to find any cyst walls proved futile, and the orbital cavity was most thoroughly cleansed by syringing with an antiseptic solution, 3% boric acid. An antiseptically prepared drainage tube was now put into the depths of the orbit. The wound was closed by 3 points of sutures placed so as to leave an opening for the draining tube; the wound was then covered with a piece of iodoform gauze smeared with antiseptic vaseline, over which was placed a compress of absorbent cotton and the whole kept in



place by a flannel pressure bandage. The day following the patient said he had some pain during the night in the eye. No discharge from the wound, which, except by the tube, was apparently healed, by primary adhesion. Much swelling of the lids and surrounding parts; no impairment of movements nor diplopia; some ocular chemosis; clear cornea. The tube was removed and the orbital cavity carefully syringed out with peroxide of hydrogen. From this time on, the tube was removed twice daily and each time the orbit syringed, until May 12, when this was discontinued, as it was obvious the wound was healing from its bottom as shown by the steadily increasing difficulty of introducing the drainage tube, which was gradually shortened until June 2, when it was left out altogether; and on June 6, the patient was discharged from the hospital entirely cured.

In regard to the character of the tumor, it seems to me that in the light of the study of such growths, especially from the carefully compiled list of Berlin's already referred to, we must consider it to be a dermoid tumor.

Von Wecker and Spencer Watson thought these tumors had their origin in the lid and thus invaded the orbit, see Berlin's article, (*loc cit.*). He could only find two cases in which there was connection with the skin of the eye-lid, and this was, in both instances, in the form of a fistulous connection between the lid and the inner walls of the cysts. In the one the fistula seemed to have been due to trauma, and developed at the site of injury\*. In the second the fistulous opening as well as the entire inner wall of the cyst were covered with fine hairs,† a condition which spoke for the dermoid nature of the cyst. In my case no such demonstration of the dermoid nature of the tumor was demonstratable, on account of degeneration of the contents of the cyst and impossibility of removing the walls. Nevertheless, as Berlin seems to clearly demonstrate—these tumors are probably dermoid in character.

I believe that the removal of such a tumor in its sac is practically impossible, and that the proper operative course is to keep the orbit drained by a tube, and to inject its cavity until healing takes place from the bottom; nor does it seem an easy matter to accomplish this by operating through the conjunctival cul-de-sac as I first attempted.

\* Vergl Schwarz, Graefe and Walther's *Journal der Chir. und Augenheilkunde*, Vol. vii p. 235, 1825.

† Spencer Watson, *Les Kystes dermoïdes intra orbitaires*. Congrès de Londres. *Compte rendue*, p. 151, 1873.

EYE CLINIC OF MEDICAL DEPARTMENT OF THE  
UNIVERSITY OF NASHVILLE AND  
VANDERBILT UNIVERSITY

By PROF. G. C. SAVAGE, M.D.

REPORTED FOR THE RECORD BY GEO. H. PRICE, M.D.

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ENUCLEATION OF AN INJURED EYE.

Gentlemen, the patient before you comes for the purpose of having an enucleation of his left eye.

The prime object in his mind is that he may be able to wear an artificial eye, which, as you have already been taught, should be a secondary consideration. The first of all reasons for enucleating an eye is, that sympathetic inflammation may attack and destroy the fellow eye. There is that danger in this case. Already his right eye has manifested symptoms of sympathetic irritation, at different times. At this moment it is a weak eye.

I never hesitate a moment to advise an enucleation when these two conditions exist, viz:—an eye both useless and dangerous. An eye is certainly useless when there is no light-perception; and an eye is always dangerous when it has been destroyed by an injury in the ciliary zone. We have these two conditions existing in this case.

The history in this case is rather obscure as to the immediate cause of blindness. He reports that when about three months old he received an injury to this eye, but the nature of this injury is unknown to him or his friends with him. He has never had vision since soon after the accident. At the age of two years the ball began to enlarge as he expressed it, that is, it in all probability took on a staphylomatous condition, which continued until he was about ten years old, when this increased tension caused a rupture, leaving it in the condition which it now presents.

You will observe that the corneal tissue left is small in amount and leucomatous in character, and the conjunctiva has a drawn appearance indicative of cicatricial tissue. Again you will notice that the globe is much smaller than the one of the

opposite side. The probable seat of this injury was in the ciliary region, and the inflammation resulting involved, to a greater or less extent, all the structures of the eye, its appendages and attachments, and hence the steps of the operation will vary from those laid down by authors for an enucleation. I will enucleate this eye under the influence of cocaine, as I have often done before. I do so in this case with the knowledge that my patient ordinarily has not much power of endurance. On one occasion, to satisfy him, I inserted an artificial eye over this stump of an eye as you see it. The pressure caused him to faint. The cocaine having had time for its full effects I will begin the operation by separating the lids with this stop-speculum. I will pass this needle, which you see armed with a double thread, through the eye at the corneo-scleral ring, or where it should be, and will secure the thread by tying its two ends together, so that I can easily manipulate the shrunken globe. This is the most painful part of the entire operation, but this pain is only temporary. Now with scissors I dissect the conjunctiva from the ball, and at the same time I sever all the muscles as I come to them, as they are all involved in the plastic material thrown out during the inflammation. You see as I come near the ciliary and optic nerves I must wait a little on the cocaine to act, of which I now insert a few drops behind the ball. Now I remove the ball, and the patient has experienced but little pain from first to last. Gentlemen, where you can, always use the cocaine anæsthesia, it is less dangerous in many respects, and the after-effects are but trifling, at least I have had no bad effects in a single case. This is due to the fact that the free hemorrhage prevents absorption of the drug into the system.

The dressing is simple in detail. The hemorrhage being checked, the orbit is dusted well with Iodoform, and lids closed, then bichloride gauze is placed over this, after which I put on sufficient absorbent cotton to take up any secretion. With this simple four tailed bandage I secure the dressing and allow the patient to be moved. This patient will be seen twice daily, when the wound will be thoroughly cleansed and fresh dressings applied. Your cleansing solution may be one of bichloride of mercury or boracic acid, or even common table salt. I expect

this patient to be well in a few days, and in ten days to two weeks I will fit an artificial eye for him, after which he can return to his home. I desire to say that it is always well to teach the patient how to take out and replace the eye before dismissing him, as will be done in this case.

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#### MALIGNANT DISEASE OF EYE.

I now present another patient who is suffering from a disease which may necessitate an operation of the same character as the one first performed, but more extensive, the exact nature of which will be determined by the developments in the case.

Gentleman, I obtained the consent of this patient to do whatever may be found necessary to eradicate the disease before commencing the ether. I do this always where there is any doubt about the extent of the operation and especially in those cases where the indications point, as in the case before you, to a malignant growth.

The history in this case is about as follows:—About one year ago, this patient who is now beyond middle life was accidentally struck in the inner corner of his right eye by a whip lash. The immediate injury sustained was considered of no special moment as the traumatism was but slight, and was naturally thought to be one which would soon be relieved by proper treatment. This injury was an abrasion of the conjunctiva at the inner canthus and in all probability involving the caruncle. Contrary to the hope of the physician in charge of the case, and also to the patient, the healing was delayed and finally, when the trouble gave promise of disappearing, there appeared a small nodular growth at the original site of the injury. This, according to the patient's statement, assumed a pedunculated form at first and protruded at the inner canthus. I think this peculiar form came from the pressure of the lids upon the mass. The small tumor was removed by his physician who tied it off with a ligature. In a short time the growth returned, and was a little more extensive. This was removed and some caustic applied to the site of the tumor. According to the patient similar operations were made several times, as the growth continued to recur

and each time involving more and more of the conjunctiva and subconjunctival tissue, until when he came to my office last evening, I found the condition in which he presents himself this morning.

You note that the lids are heavy and much thickened, the upper lid being in a state of ptosis, while the lower is slightly everted. When I separate them slightly and turn the lower a little more out you see roll into view a large mass of warty looking tissue which is soft, quite friable and vascular. The same condition pertains to the upper lid, and you will also note that there is a considerable development of this same growth at the inner canthus, extending above, below and backward, becoming continuous with the growth upon the lids, and also involving the deeper structures of the orbit. Under the anæsthetic I am able to examine thoroughly and I am satisfied that the operation here must be extensive in order to be effective, hence I will remove the lids, the globe and the contents of the orbit, or at least all that portion which seems to be involved and even beyond. The lids being removed and the development at the inner canthus, we come down to the globe, which you see is pushed far toward the temporal side. The nature of the disease, its rapid growth after repeated removals, and the fact that the tissue surrounding the eye is also involved in this growth, are all indications of malignant disease, and hence I remove the eye itself. Inspection of the organ shows the cornea intact, and the remaining coverings seemingly in good condition. With my finger I feel the nodular mass in the bed of the globe and I will remove this, keeping up the exploring with my finger from time to time. Now I have removed almost the entire contents of the orbit. Portions of the growth will be sent to the pathological department and we will see later the exact character of the tumor. The history and extent of the tumor indicate malignant growth and hence I have made an extensive operation. The prognosis is, as a matter of course, unfavorable, but I hope the operation will give the patient relief at least for a time.

The dressing here is similar to that used in the first case, though the cavity will be packed with surgeons lint and the



gauze, cotton and bandage over this. This will be changed from day to day and the wound watched.

This case reminds me of one on whom I operated three years ago. He came from Mississippi and gave a history of a growth beginning on lower lid of right eye. He had it removed by some caustic application, but it returned in a few months. The second growth, more extensive than the first, he had removed by the same man and method. In a few months the disease re appeared and this time extended wider and deeper than ever. He thought he would have nothing more done and would await his final end. His suffering, however, became so great he decided that he must have temporary relief, and for this purpose he came to me. I found his condition much worse than that of the patient just operated on. His eye-lids were destroyed and his eye-ball was a shapeless mass. Altogether the case was most unpromising. I operated on him with the understanding that he would only get temporary relief from his suffering; that in a few months at most his disease would return and would kill him. The operation done was necessarily more extensive than in the case now before you. The remains of both lids and the entire contents of the orbit were removed. Finding the malar and superior maxillary bones of that side involved in the disease, with a bone gouge which I happened not to sell when I gave up the practice of general surgery, I removed the diseased portions as thoroughly as possible. How thoroughly all diseased tissues were removed you may judge when I state to you that my patient from then until now has been free from suffering, and even at the present time there is no indication of a return of his trouble. In these two cases, however, I shall expect epithelioma to re-develop at some time or other, and result fatally, unless some acute disease shall do the work of death.

## FURTHER CONTRIBUTIONS TO KERATOMETRY.

EXTRACT FROM A PAPER

*Read in the Section of Ophthalmology, at the Forty-second Annual Meeting  
of the American Medical Association, held at Washington, D. C.,  
May, 1891.*

BY SWAN M. BURNETT, M.D., PH.D.,

OF WASHINGTON, D. C.

Professor of Ophthalmology and Otology at the Georgetown University, Ophthalmic and Aural Surgeon at the Garfield Hospital, Providence Hospital, and the Children's Hospital, Director of the Eye and Ear Clinic at the Central Dispensary and Emergency Hospital.

It is now nearly seven years since I began to use the ophthalmometer of Javal and Schiotz daily in my practice, and six years since I published my first results from its use.

I appreciated the great practical value of the instrument from the beginning, and have persistently attempted to keep its importance as an instrument of diagnosis in astigmatism before the profession. For a time the apathy and indifference to its value were as intense here as they still seem to be in England and Germany, but recently there have been evidences of a greater interest in the instrument, so that, whereas six years ago, so far as I am aware, there were only three in use in this country, there is now, I understand, difficulty in getting orders for it filled.

In my Treatise on Astigmatism, I made the statement that I regarded it as the most important instrument of positive diagnosis given to us since the invention of the ophthalmoscope, and I have as yet no cause to retract or modify that opinion. It must be borne in mind, however, as has been said before, that the principal use of the instrument is in the determination of astigmatism. Of the general refractive condition of the eye it gives us no idea. General ametropia, with only the rarest exceptions, is due to variations in the length of the eye ball; on the other hand, the use of this instrument has taught us how constantly astigmatism has its seat in the cornea. Previous to the introduction of this instrument, this was more or less of an

assumption. In one of my statistical papers, I have shown how rare it is to find astigmatism any other than according to rule, that is, astigmatism with the greatest curvature in, or approaching the vertical meridian. The examination of several thousand eyes since that time has confirmed that statement fully. It is also a fact that it is very seldom we find a cornea without a measurable degree of astigmatism. Normal corneal astigmatism I would place at 0.25 or 0.5 D., and according to the rule. This is true of eyes in which every test has shown the existence of emmetropia, this no glass, spherical or cylindrical, has improved vision for our test letters. Now a half dioptre of total astigmatism, or even less, in very demonstrable subjectively, and is often the cause of asthenopia, so that it would seem that this corneal astigmatism must be corrected by an astigmatism of the lens of an equal degree, which is, moreover, contrary to the rule.

This lenticular astigmatism may be due to an unequal contraction of the ciliary muscles, causing an astigmatic curvature of the lens surfaces, or to a tilted position of the lens respecting the visual axis.

The latter, in my opinion, is much commoner than is generally allowed, particularly as a corrective of the normal astigmatism of the cornea. I am fully aware that we are not, as yet, in possession of sufficient data for final generalizations, but the indications point to something like this: Normal astigmatism of the cornea, according to the rule, probably due to lid pressure; corrective astigmatism of the lens, contrary to the rule, probably due to the rotation of the lens on its vertical axis, cause undetermined.

My observation leads me to believe that this lenticular astigmatism against the rule is nearly always present, for when I find the ophthalmometric readings show either no corneal astigmatism or a slight astigmatism against the rule, there is tolerably certain to be an astigmatism demonstrable subjectively against the rule. So constantly have I found this to be the case that I have formulated the following law to which there are, I think, only occasional exceptions: For the total subjective astigmatism, subtract 0.5 D. from the corneal astigmatism when

it is according to the rule, and add 0.5 D. if the corneal astigmatism is against the rule.

In a healthy eye I think this astigmatism, due to the turning of the lens on its vertical axis, rarely exceeds 0.5 D. When the lenticular astigmatism is greater than that, I suspect an implication of the ciliary muscle and resort at once to a mydriatic.

I do not believe, as some appear to do, that the ophthalmometer enables us to dispense altogether with paralysis of accommodation, but it does, I think, make the necessity for its use less frequent, and the indications more direct and certain. For example: the ophthalmometric readings show 2 D. of astigmatism according to the rule, whereas the subjective test shows none at all, or probably 0.75. I then suspect a partial accommodation which neutralizes the 1.25 D. of corneal astigmatism remaining, and usually a mydriatic brings it to light.

The form of the cornea of the two eyes is usually approximately the same, that is to say, if there is a corneal astigmatism it is nearly always of the same variety. To this, however, there may be exceptions, one of which I have seen, and is so unusual that I will here record it:

B. F., a girl of 13, had in the left eye a corneal astigmatism of 2.5 D., contrary to the rule, the right had a corneal astigmatism of the same degree, but according to the rule. Under a mydriatic perfect vision was obtained in the left with—2.5 axis  $90^\circ$ , and in the right with  $-0.75 \text{ } \bigcirc \text{ } -2.5$  axis  $180^\circ$ , showing that the astigmatism in both eyes was wholly corneal, though of opposite kinds. The emmetropic meridian was the same in each, viz., 41 D.      \*      \*      \*      \*—*The Journal of A. M. A.*

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## THE OPHTHALMOMETER.

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By reference to Dr. Ring's paper descriptive of the Ophthalmometer, published in number 5 of the Record, a statement will be seen to this effect: the disk should be at an angle of twenty degrees. It is now known that it is far better for the disk to be perfectly vertical, hence all the later instruments are so made as not to allow this tilting of the disk.

In this issue of the Record will be found an extract of the paper on the Ophthalmometer, which was read by Dr. Swan M. Burnett before the section of Ophthalmology of the A. M. A. In this connection it may be said that Dr. Burnett deserves great credit for his advocacy of this instrument, during the past six years. His advocacy seemed to have but little effect on the Ophthalmic mind in the U. S., until within the past year or two. The instrument is certainly one of great practical utility, and should be in the office of every Ophthalmic surgeon. The only possible objection to it is the very great cost. There are few, however, who after using it for a short time, would be willing to part with it for several times its cost.

This brief editorial notice is not a paid advertisement, but simply an expression of the conviction of the editor in regard to this instrument.



## HOMATROPINE AS A MYDRIATIC IN THE WORK OF REFRACTION.

"Is it reliable?" is a question that has again been brought forward by Dr. Chisolm's recent communication to the American Journal of Ophthalmology. Some declare with Dr. Chisolm that it is, while others say that it is not. In my experience, which covers the entire existence of our knowledge of the drug, there has been nothing in my practice so satisfactory as its use. The trouble with the drug must depend on the manner in which it is prepared and used. Under the same conditions it ought to have the same effect whenever and by whomsoever used. In the very beginning I commenced with a strength of one grain to the fluid drachm of distilled water; and of this solution I instilled into each eye one drop every five minutes for forty-five minutes. Ten minutes after the instillation of the 10th drop I commenced the work of refraction. This practice I have kept up to the present time and, too, without being disappointed one time in a hundred. My confidence in Homatropine is so great that I feel like endorsing it most heartily.

One argument made by Dr. Chisolm in favor of the use of Homatropine is that a business man can have his eyes refracted on Sunday and be ready for work Monday morning, having lost no time from his business. The practice of this thought would be wrong religiously, morally and physically. If it is wrong for the merchant or banker to run his business on Sunday, it is equally wrong for the Oculist to favor him by doing work for him that could be deferred to another day. I doubt if Dr. C. does the work of refraction on Sunday, notwithstanding he suggested the idea.

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THE list of those wishing to enter into the organization of the new Ophthalmological Society continues to grow from week to week. In the minds of a very great number there exists the need for the organization and the determination to effect it.

## CATARACT.

Of the papers on this subject read in the Section of Ophthalmology, at the last meeting of the A. M. A., we have published full extracts from two. This was done because of the knowledge that many of the readers of the Record are not members of the A. M. A., consequently had not read these productions. Space will allow only a review of the remaining papers read on this subject, and in reviewing, only those features will be alluded to which were not embodied in the papers from which full extracts have been made.

The specific thought in the paper by Dr. Frothingham, of Detroit, was the protection of the eye after the extraction has been made. Several accidents occurring in his practice, that greatly retarded the cures and rendered them less perfect than they would have been, led him to devise what he considers to be a better means of protection than those before introduced by Dr. Gifford, of Omaha, and Dr. Prout, of Brooklyn. He exhibited to the Section his woven wire mask and demonstrated its protective power. When protection from external violence is needed, this mask will meet the indication. If not too cumbersome it will most likely come into general use, and will now and then be able to lengthen the list of successes.

The paper read by Dr. Murrell, of Little Rock, was a surprise to the greater part of his audience. To emphasize his plea for greater freedom for patients who have been operated on for cataract, he reported a number of charity cases on whom he had operated before his college class, and immediately had sent them home, a mile or more, on foot or in an express wagon, and afterwards had no cause to regret it. He also announced that he now operates on private paying patients in his office, when he can get their consent, and then sends them in a carriage to a room in some hotel or boarding house. So far as could be learned at the meeting,

the general opinion was that it would not be safe to follow Dr. Murrell's teaching in this matter. A good result, with better reason, can certainly be expected if the patient is operated on in the room and on the bed which she is to occupy. Two or three hours of quiet in a recumbent posture cannot be but good. After that no harm is likely to come from turning to rest on one side, or even sitting on the side of the bed or on an easy chair. After the first day the experience of many shows that the patient may safely sit up all day, walking for exercise not to be indulged in until after the fourth or fifth day. More freedom than this, in the light of our present knowledge, would seem unjustifiable.

In a paper read by Dr. Edward Jackson, of Philadelphia, on "Pressure on the Globe after Cataract Extraction" he demonstrated to all that a pressure bandage must do harm and not good. All his auditors had, most likely, abandoned long ago the use of this relic of the past. The wisdom of this action the doctor showed. He closed his paper with the following sentence: "Therefore, the primary consideration in the application of dressing after such an operation is the avoidance of all pressure."

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DR. GEO. H. PRICE, who has been associated with Dr. G. C. Savage for the past two years, is soon to begin work in an office of his own. He has recently spent a few weeks in New York City studying, and working in the interest of the Record. He is well qualified for his chosen work, and carries with him the best wishes of his old associate.

Dr. Price will continue to have charge of the Department of Otology, Laryngology and Rhinology of the Record.

## Department of Otology, Laryngology and Rhinology.

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GEO. H. PRICE, M. D., EDITOR, 621½ Church Street,  
NASHVILLE, TENN.

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### AMERICAN LARYNGOLOGICAL ASSOCIATION.

TWENTIETH ANNUAL MEETING, HELD AT THE  
ARLINGTON HOTEL, WASHINGTON, D. C.,

*September 22, 23 and 24, 1891.*

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*First Day. Tuesday September 22nd.*

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Twenty-five members answered to their names at roll call, and business of the association was begun.

The president's address by Dr. W. C. Glasgow, of St. Louis, was pithy, and to the point. In speaking of the past history of the association, he said that it was of such a character as to fully justify the formation of this section of the Congress of American Physicians and Surgeons, and that it should accordingly be maintained as a separate organization. This association should stand as a bulwark against ignorance and empiricism born of the supposition that a few instruments, saws, sprays, etc., constituted a laryngologist.

He impressed upon the members the importance of being at the meetings regularly, as useless members should be dropped.

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#### A CASE OF FOREIGN BODY IN THE TRACHEA.

Dr. W. C. Glasgow, reported an interesting case coming under his observation in which a child 8 years of age had sucked into

its trachea a toy balloon. Severe paroxysms of choking, cyanosis and aphonia occurred from time to time, but when these passed off the child was quiet.

Examination revealed nothing in the larynx or trachea. After a low tracheotomy was made, the sound was passed without developing the presence of the body. A canula was introduced and worn five days and after a severe coughing spell a red mass was found at its inner opening which proved to be the balloon. The mouthpiece of wood was forced up into the glottis and was removed. The location of the mouth piece was probably in the left bronchus, as at this point a peculiar whistling rale was located, and the rubber portion lay in such intimate contact with the trachea as to prevent detection. The patient made a complete and rapid recovery.

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#### THYROTOMY IN A CHILD EIGHTEEN MONTHS OLD.

Dr. Clinton Wagner, of New York presented a paper on this subject, which opened with indications for this operation. Urgent dyspnoea due to obstruction by foreign body or benign neoplasm; in malignant disease, when a thorough removal is promised; in tuberculosis never. Dr. Wagner had operated in six cases of malignant trouble, in all six of which cases the neoplastic growth recurred the patients dying, and four times in children.

In this case the patient was the youngest operated on, and the operation was done before a positive diagnosis was made. The child had been exposed to inclement weather, and had suffered for some three months with severe dyspnoea, having nightly attacks of spasm of the glottis.

Tracheotomy was performed and two weeks later thyrotomy, the postponement of the case being compelled by the ill health of patient. The thyrotomy revealed a small papilloma on the left cord posteriorly.

The patient did well and soon recovered.

Dr. C. C. Rice, of New York in discussing the case and paper, impressed on the section the importance of diagnosing the condition before operating.



He prefers to operate under the influence of cocaine locally and chloroform, enough of the latter being used to render the patient unconscious, the operation to be made through the larynx. If the patient struggles or grows cyanotic, intubate; when quiet again remove the tube and proceed.

Dr. Ingalls of Chicago, prefers the finger for diagnosing growths in the larynx.

#### THE TONSIL IN HEALTH AND DISEASE.

Dr. Harrison Allen, of Philadelphia, in opening his paper on this subject said that the tonsil was an association of diverticula, on the wall of which were follicles and mucous glands, the former being closed sacs. These views he said were not in accord with the general clinical expressions.

The faucial tonsil is a compound structure, while the lingual tonsil is a simple structure of the same general type. The depression of groups of diverticula form crypts. This arrangement is much disturbed by disease.

It is the lower part of the tonsil affected in hypertrophy. In children, tonsils are large and seem to bear some inverse relation to the thymus gland. They do not seem to bear any relation to morbid processes of a specific character.

The frequency of diphtheritic tonsillitis seems to be due to the fact that the tonsil offers mechanical obstruction, and hence the contagion is deposited at this point.

Inter communicating canals or sinuses are found in hypertrophy of tonsils, which should be slit up, thus you will obviate the operation of tonsillotomy.

After slitting, remove any rough edges projecting, and treat with astringents.

Adenoid growths in the vault of the pharynx are commonly associated with this condition, and these growths should be removed before operating on the tonsil. Cysts of the tonsil are rare.

Abscesses are as a rule peritonsillar, but now and then we have a true tonsillar abscess of chronic type persisting for years. Acute suppurative tonsillitis, so called, is always peritonsillar.

In incising do not go too high up. Hemorrhage is slight, the blood coming from an enlarged tonsillar branch, and there is no danger to the internal carotid artery.

Dr. Jonathan Wright, of Brooklyn, operates upon the enlarged tonsil before attacking the adenoid tissue in the pharynx, and finds that after the tonsil has been reduced the adenoid growth will often disappear. He thinks the adenoid is secondary and often due to the damming up of the naso-pharyngeal secretions, by the obstructing tonsils.

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THE TROUBLESOME SYMPTOMS CAUSED BY ENLARGEMENT  
OF THE EPIGLOTTIS, AND THE ADVISABILITY OF  
REDUCING THE SIZE OF THIS CARTILAGE  
BY OPERATIVE MEASURES.

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Dr. C. C. Rice, of New York, who presented this paper, remarked that all had noted the enlargements of the epiglottis due to syphilis, tuberculosis and lupus, the symptoms of which were a sense of fullness, tickling, empty cough, and chronic laryngitis as a sequel. In enlargement of the lingual tonsil all of the foregoing symptoms often appear.

He also thinks that the cartilaginous portion of the epiglottis undergoes true hypertrophic changes, causing these symptoms.

Fluctuations in the size of the organ due to more or less congestion are frequently noticed. The enlargement might be congenital, or due to hot climates, causing relaxation, also injurious use of tobacco, alcohol and gastro-intestinal complications. Oedema is rare. In the treatment of this condition astringents are useless, and resort must be made to operative measures. In mild cases, cocaine might relieve and cure, and should be followed by an oily spray. The inflammatory reaction from the use of the galvano-cautery is of such a character as to render this measure unsafe, but long bladed scissors or cutting forceps gave results as good if not better than epiglottitomes. Dr. Rice has operated in two cases.

Dr. Vanderpool, advocated the use of the sharp spoon or curette.

THE RESULT OF TREATMENT OF THE UPPER AIR-PASSAGES  
IN PRODUCING PERMANENT RELIEF IN ASTHMA.

Dr. F. N. Bosworth, of New York opened the discussion of this subject, by laying down the conditions upon which this disease is dependent, namely—a neurotic habit, a morbid intranasal condition, and an exciting atmospherical state. The object to be aimed at, is the re-establishment of the normal function of the nasal tract, which may be done by the proper treatment, both operative and medical.

He had seen 88 new cases since his last paper on this subject of which 42 were cured, 32 improved, 2 unimproved, 11 history unknown. The only criterion of a cure was the prevention of a recurrence of the disease for at least one year.

Dr. Beverly Robinson was inclined to the opinion that too much stress was put upon the nasal feature and not enough given constitutional and other causes. The relation of uterine and stomach troubles, together with pulmonary changes, malaria, and kidney diseases were alluded to by him, as being in many instances of importance, since a neuritis of different nerves might be the cause of the asthmatic condition.

Dr. Roe said that asthma was oftener due to some change in the bronchial mucous membrane, though the nasal trouble may have preceded the former. The following discussed the question: Drs. Wagner, Shurley, McKenzie, Ingalls, Mulhall and Glasgow. The discussion tended to show that asthma was considered as of protean origin, and that to make the nasal factor an absolute condition was misleading, and should be guarded against in the investigation and treatment of the disease.

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*Second Day, September 23rd.*

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Nasal Papillomata:—Dr. Jonathan Wright of Brooklyn, had had one case of true papillomata in several hundred cases of nasal growths, and hence could not agree with Hopmann, as to their being quite frequent. The term has been misapplied. It would be better to say papillomatous fibroma. The microscope alone can discover the true character of the growth. Most of

these growths occur on the cartilaginous septum or floor of the nose, while the cases related by Hopmann grew largely from the inferior turbinated. The location of true papillomata is of importance in diagnosing the character of the growth. It must be remembered that the muco-cutaneous juncture is the most frequent seat of epithelioma. The treatment consists in the thorough removal of the growth and involved tissue.

Dr. Mulhall reported one case. Dr. Jais found chromic acid to be specially useful in these cases for cauterizing the stump after removal. Drs. McKenzie, Shurley and J. Solis-Cohen, also discussed the paper.

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#### A STUDY OF A CASE OF NASAL TUBERCULOSIS.

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Dr. Shurley of Detroit, presented a history of a case of nasal tuberculosis in a monkey which had been under the treatment for tuberculosis by the Shurley-Gibbs method. The bacilli which were at first present disappeared from the nasal discharge after treatment, but reappeared when it was abandoned. Later the animal was killed and spleen, lungs, liver, kidneys and intestines were examined but no tubercular bacilli were present nor any manifestation of a tuberculous condition. The point to which Dr. Shurley called attention was the appearance of the bacilli in the discharge from the nose, and their absence from other parts of the body. He considered it a little surprising that the bacilli should have remained only as a local condition where opportunity for infection was at hand. He thinks this case throws some light on the question of the relation of the tubercular bacilli to the tubercular condition as generally accepted.

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#### CYST OF THE MIDDLE TURBINATED.

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Dr. C. H. Knight of New York, presented a paper, and specimens illustrating this condition. He said the condition was frequent but unobserved by many. The patient was a woman, with large mass on middle turbinated, deflected septum, impeded respiration and other symptoms of obstruction, besides she

suffered from hemicrania and neuralgia of the fifth pair. Children seem to be exempt. Removed growth with cocain anesthesia. If myxoma coexist there is danger to the autrum. It has been regarded as a rarefying otitis, and by Greville McDonald as a lengthening and turning of the bone upon itself, which finally coming in contact with the body of the bone forms a closed cavity, having a mucous membrane lining this cavity, which can be demonstrated by the presence of cilliated epethlium. This second theory was the one to which Dr. Knight leaned, though the explanation was a bit difficult to make out in all cases.

These cysts are generally broken in removal. Dr. Wright had removed a similar cyst some two years since. He does not coincide with McDonald in his theory of their formation, as in his case there was no cilliated epithlium lining the cavity.

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#### VARIOUS FORMS OF ETHMOIDAL DISEASE.

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Dr. F. H. Bosworth, of New York. The Dr. said he had had over 20 cases coming under this head which he divided into the following classes:

1. Myxomatous degeneration without purulent discharge 5 cases.

2. Extra cellula myxamatous degeneration complicating the antrum—Ethmoid disease suspected, this is probably a later form of the first class—of these 7 cases.

3. Purulent Ethmoid disease with polypi—7 cases, all are persistent.

4. Intracellular polypi without pus discharge, 3.

5. Intracellular polypi with purulent discharge—2 cases.

This may be a later stage of the 4th class—making in all but three classes—nasal polypi growing in the vicinity of the hiatus semilunaris are the cause and not the result of this ethmoidal disease.

The treatment consists in opening all cavities, and establishing free drainage. Drs. Jarvis, Wright, Mulhall and McKenzie, discussed, agreeing in the main with Dr. Bosworth as to classification and treatment of these conditions.

Dr. Jarvis, thought that there should be another class, namely



the acute purulent ethmoiditis, which can be relieved by drilling or cutting with other instruments, so as to allow a free discharge of the pus.

He has also seen the non-suppurative or non-myxomatous condition due to deformity, which prevents a removal of the secretions.

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#### RADICAL TREATMENT OF NASAL MYXOMATA.

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Dr. W. E. Casselberry, Chicago. The writer found that in about 66% of these cases the myxomata grew under the middle turbinated body, in the region of the foramen semilunaris, thus seeming to prefer those parts of the mucous membrane most subjected to influence of secretion, and which from the nature of the case are more or less soddened, hence forms a good soil for this growth.

The turbinated body in many cases being more or less involved, stands in the way of the operator and obscures the view, hence it becomes necessary to remove so much of the anterior inferior portion of the middle turbinated as will enable you to get free access to the part involved.

To remove this portion of the bone I prefer the use of scissors designed for that purpose. After the removal, the galvano-cautery is applied to the site of the growth, but great care must be used in order to prevent any danger of inflammation extending to the brain, cases of which have been reported, caused by too radical measures in operating.

Dr. Sajous had at one time passed the cautery behind the bone, but now removes a portion of the body to give him space to work in. He first removes the myxomatous tissue, then applies the electrode. The electrode used by Dr. Sajous is glass covered, having a bent and flattened platinum tip with which he can scrape the part, then burn.

Dr. Roe. When turbinated is enlarged removes a portion with his bow saw, rather than with the snare or scissors to which he is opposed.

Dr. Rice: "I am opposed to the wholesale removal of the middle turbinated bone, since it may lead to atrophic condition.

I am opposed to the use of galvano-cautery in these cases, the use of the saw or scissors must be resorted to in these cases,—after-treatment is important and necessary.

Dr. Mulhall, uses the snare to remove the projecting portion of the turbinated, and makes use of the galvano-cautery with good results,—the cautery should be applied and withdrawn while white hot.

Dr. McKenzie also uses the cautery at a white heat, after removing a portion of the turbinated body, where indicated.

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*Third Day, Thursday September 24th.*

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THE SYMPTOMS AND PATHOLOGICAL CHANGES IN THE UPPER AIR-PASSAGES IN INFLUENZA.

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This being a discussion, Dr. J. Solis-Cohen, of Philadelphia, opened the same by remarking that the President of the Association had, in a paper on this subject, seemed to anticipate the nature of the disease in his elaborate exposition of the same.

Lymphoid œdema of the pharynx and larynx seemed to be the prevailing condition in the cases seen during the recent epidemics. Spasm of the larynx had been a prominent cause of death. Abscess and hemorrhage of larynx, and otitis media had been common complications, also paralysis of throat muscles had been noted following the diphtheritic conditions.

Mycosis of tonsils, inflammation of sinuses and eustachian tube often followed in the train of the disease. The obscurity of the etiology had been noted. Symptoms not characteristic.

The catarrhal condition prevailed in about 25% of all cases, the remainder being distributed between pulmonary, nervous and gastric disturbances.

The catarrhal condition seemed to be of the passive rather than active character. Dr. Cohen spoke of two interesting cases coming under his treatment, one a man with epithelioma of palate, the other a woman suffering from tuberculosis of larynx and lungs, who having contracted the influenza recovered from both the acute attacks and the chronic constitutional diseases.

DR. SHURLEY thought the pandemic was similar to cerebro-spinal meningitis in its onset. The chemical changes show that the condition may be due to changes in the system.

DR. WRIGHT had been struck with the absence of lesions of nose and throat, in the clinic patients, while all other symptoms were present, though but slight in character, this was surprising.

DR. MCKENZIE said, "I am interested in his relation of cases influenced by influenza, as I have reported a case of syphilis affected favorably by an acute inter current febrile disease, and I hope this subject will be continued.

DR. ASCH's experience coincided with Dr. Wright's, that is no uniform or marked lesion of the upper air tract. "The only lesion I noted as constant was the effection of the tonsils, which caused me to fear the safety of my patient."

DR. CASSELBERRY, of Chicago, found that lesions of the upper air passages were most violent, hence he thought that climatic conditions played an important part in the local manifestations of the disease. Most cases begin with trouble in the upper air-passages and extend down, causing in many cases pleuritis and pneumonia.

DR. ROE found that those patients who suffered from hypertrophic conditions of the nasal membrane were most liable to take on the disease in the upper air-passages. The œdema was largely due to vaso-motor paresis and weak heart.

DR. LANGMAID, of Boston, said that the most prominent feature there was the otitis media, though others were present, also broncho-pneumonia of circumscribed character.

DR. B. ROBINSON, of New York, had noted the ear symptoms, and that while no lesion could be demonstrated by observation yet patients suffered, subjective noises being more pronounced in one ear.

There was a sensation of a foreign body in the ear in many cases, no suppuration, but the deafness obstinate to a remarkable degree.

Drs Jarvis, Glasgow, Shurley and Sajous, also discussed the question, the drift of which seemed to point to the liability of disease in this locality being more prominent where patients were subjects of previous rhinitis of various forms, also that the de-

flected septum seemed to play an important part in many cases.

DR. SOLIS-COHEN said, he did not wish to convey the idea that influenza would cure tuberculosis of the larynx, though in one case of his this disease had disappeared after an attack of influenza.

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USEFUL DEDUCTIONS DERIVED FROM THE STUDY OF A CASE  
OF CICATRICIAL CONTRACTION OF THE LARYNX,  
POSSESSING UNUSUAL CLINICAL FEATURES.

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DR. W. C. JARVIS of New York, presented a specimen from a man 60 years old, who had 10 years ago suffered from nose and throat trouble, and who for some three years since complained of pain in the head, vertigo and severe suffocating attacks at night.

At 20 years of age he had syphilis, lesion in nose, also blow upon that organ. Septum was perforated and disease had attacked the larynx. Epiglottis was only a remnant. The cords, arytenoids, false cords, also involved and the laryngeal opening was small and circular. The suffocating attacks were brought on by food falling into the larynx.

Potassium Iodide was administered with good results, and oily sprays gave some relief. Tracheotomy was advised, and the operation was to be done, but patient died from enteritis.

I call attention to the fact that the patient was for so long a time rendered comfortable by the use of palliative measures.

In the specimen you will see that the rima glottidis is only  $\frac{1}{8}$  of an inch, the cords beneath are in fairly good condition, the trachea not involved, hence you see the operation advised would have in all probability afforded much relief. This condition might have been averted if the nasal lesion had been properly treated, upon its first manifestation, hence the importance of the earliest symptoms of a syphilitic lesion in the nasal cavity.

Drs. Asch, Casselberry, Sajous, McKenzie, discussed the case.



A CASE OF EPITHELIOMA OF THE LARYNX.

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DR. MORRIS J. ASCH, of New York, presented an interesting case of intrinsic epithelioma of the larynx in a man aged 70 years. Hoarseness was the annoying feature of the case. Examination difficult, epiglottis sensitive, rima glottidis small, chronic laryngitis, topical application relieved all symptoms but hoarseness. Later voice became nearly extinct, larynx nearly closed but no ulceration, I advised tracheotomy but he refused.

(Mch. 1891) About one month later he consented, and I operated with cocaine. The patient did well for a time but an attack of La Grippe caused trouble. Expectoration became thick, sticky and streaked with blood, which told of extension of disease. He died shortly after in an attack of dyspnoea.

The examination of the larynx after death, showed the ventricular bands and larynx much involved, the cords being thickened.

The absence of symptoms of the disease so long delayed is the feature of the case, no pain, no ulceration and only the swelling to mark the advance of the disease. This would indicate that intrinsic cancers are of slower growth than the extrinsic, less active, less malignant and less liable to recur after removal.

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THE LARYNGO-TRACHEAL NEOPLASMS OF TUBERCULOSIS.

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DR. JOHN N. MCKENZIE, of Baltimore, divides the neoplasms into three classes.

1st. Papillary hyperplasia. Small granules found on the edges or base of tubercular ulcers, varying in size and shape. These rarely occur as the result of simple or diphtheritic conditions and hence are important in the macroscopic examination. They seem to be an effort on the part of nature to protect the parts, and I regard them as a sort of barrier, and the first step toward granulation. If this be so, it will influence our treatment. Unless they interfere, do not remove. Prognosis good.

2nd. Little tumors of various sizes, resembling laryngeal papillomata. These are of no importance in catarrhal state,



but in the anaemic state seem to herald the approach of tuberculosis. Stoerke laid much stress on this point. The treatment will depend upon the position and shape. If pedunculated, surgical methods are best, if sessile then chemical measures.

3rd. Solitary Tubercular tumors. I described this 12 years ago. It is an isolated tumor in a mass of miliary tubercles, set in a net work of vascular connective tissue. They spring from the submucous tissue, we can not say how deep, hence we must be cautious in operating. I would advise against operating unless tumor is large enough to interfere with the lumen of the larynx. The treatment is problematical.

Dr. J. Solis-Cohen, uses the sharp scissors to remove the mass, lactic acid locally, creosote in large doses internally.

Dr. Sajous, has found chromic acid the best for local applications.

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THE RELATION OF DISTURBANCES OF THE MUCOUS  
MEMBRANE OF THE UPPER AIR-PASSAGES TO  
CONSTITUTIONAL CONDITIONS.

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A paper on this subject by Dr. Beverly Robinson, of New York, called the attention of the society to the fact, that modern medical thought tended to place the existence of the so-called diathesis in a minor position.

There seemed to be a disposition to place too much stress upon the local manifestations of the disease. This, to Dr. Robinson, seemed to limit the possibilities of the physician's field.

While he admitted that the mucous membrane might be the local seat of the disease, yet he was confident that a constitutional condition may precede this local manifestation, as is evidenced in syphilis, rheumatism, tuberculosis, gout, lithemia, scrofula and alcoholism, which tend to increase the energy of the local disease. He made special mention of certain forms of throat disease complicating or dependent on given constitutional conditions. He thought that behind many of the ordinary catarrhal troubles, malaria might be and was an important factor, as was indicated by the yielding of the disease more

promptly to medication, when quinine was administered in these cases. If quinine failed then phosphorous and strychnia were useful.

Dr. McKenzie, in discussing this paper, looked upon scrofula as a manifestation of tuberculosis, and not as something distinct and separate in itself.

Dr. Jarvis did not agree with this view, but rather inclined to the opinion that scrofula was in some cases allied to syphilis of a hereditary form.

Dr. Mulhall considered scrofula "the product of a conception at the time of which one or both parents were incapable of producing healthy offspring," which inability might be due to syphilis, senility, alcoholism, etc.

Dr. S. Solis-Cohen, thought scrofula was an entity. The child of syphilis and the parent of tuberculosis.

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### ELECTION OF OFFICERS.

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The officers for the next year are as follows:

President, DR. S. W. LANGMAID, of Boston.

First Vice President, DR. MORRIS J. ASCH, New York.

Second Vice President, DR. S. JOHNSTON, Baltimore.

Secretary and Treas., DR. C. H. KNIGHT, New York.

Librarian, DR. T. R. FRENCH, Brooklyn.

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### COUNCIL.

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DR. W. C. GLASCOW, St. Louis, Mo.

DR. F. I. KNIGHT, Boston, Mass.

DR. D. BRYSON DELEVAN, New York, N. Y.

DR. HARRISON ALLEN, Philadelphia, Pa.

Next session will be held at Boston in June, 1892.

## ACUTE SUPPURATION IN THE MIDDLE EAR AND FACIAL PARALYSIS FOLLOWING THE USE OF EUSTACHIAN BOUGIES.

Written for the Ophthalmic Record by

H. V. WURDEMANN, M.D.,

MILWAUKEE, WIS.

The mistakes and accidents of medical practice frequently prove very instructive and if published would surely be less misleading than many cases vaunted as cures. The following comes in this category :

Mrs. —, æt. 35, deaf with proliferous inflammation in right ear for over ten years and in left for nearly three, consulted me chiefly in reference to the annoying tinnitus accompanying the disease, as she had been under treatment of others and had long ago given up hope of a cure for the deafness. H.D., R= $\frac{5}{CL}$  L= $\frac{25}{CL}$ , drums retracted, malleus almost immovable, membranes otherwise normal, left Eustachian tube patulous, right not open to forcible catheterization with chloroform until after the use of a filiform bougie. Stricture apparently in membranous portion of the tube.

Bougies in gradually increasing sizes in conjunction with the use of camphor and iodine vapor through the catheter were used every other day for two weeks and the patient treated on alternate days by other methods, (see article by author<sup>1</sup>.) Some progress was being made when one day after the bougieing she complained of more pain than usual and that night had intense earache. On the next day the membrana tympani of the right side was red and the following day despite the usual remedies, the drumhead was bulging. Paracentesis was done in the lower anterior quadrant releasing a few drops of pus. The ear discharged freely for several days. Two days after the paracentesis the patient complained that she was unable to close the right eye and upon further examination that side of the face was found wanting in mobility and expression. Typical facial

paralysis was easily recognized on the next day. This lasted but a week, yielding rapidly to hot baths, diaphoretic treatment and a blister behind the ear. The ear was treated antiseptically with the satisfaction of stopping the discharge within a week of its inception. Iron and strychnine were administered for several weeks, the patient recovering from both the otitis and the paralysis. When seen two months afterwards no trace of the latter could be observed.

I have seen great benefit result from the use of bougies in diseases of the Eustachian tube and middle ear complicated with stricture or atony of the former. Without these little instruments we would be fully as helpless in the diagnosis and treatment of some aural affections as the venereal specialist would be were he deprived of his urethral sounds or the oculist his lachrymal probes. An indiscriminate use of bougies is not to be advocated as I believe the good results of this method come mainly from mechanical dilatation of the tube, and they should be reserved for such cases as present changes in its lumen. Thus proper drainage of the middle ear and Eustachian tube and equalization of the atmospheric pressure on either side of the drumhead may be secured when other methods have failed. As a preliminary to treatment by vapors and injections they are valuable, especially in proliferous disease.<sup>1</sup>

Urbantschitsch<sup>2</sup> and Eitelberg<sup>3</sup> have recently advocated the old views of Kramer<sup>4</sup> recommending bougies in cases where there is no apparent change in the character of the tubes, as in nervous deafness, where they claim that activity in the cerebral center is set up by reflex action. Politzer<sup>4</sup> aptly remarks that inflation of the middle ear by his method or by catheterization does quite as much and is a more simple procedure. Eustachian bougies are not much used in this country as they have been discountenanced by several eminent writers.<sup>5</sup> European authors speak highly of them and lay down many indications for their use. They have lately been recommended by Cheatham<sup>6</sup> of Louisville.

Previous to this case no accident has befallen their use in my hands. Several have been published and many have doubtless occurred. It is evident that emphysema might be produced in

the cellular tissues of the throat and neck after a false passage of the bougie followed by forcible inflation. Such cases were reported by Guye <sup>7</sup> of Amsterdam some years ago. Urbantschitsch <sup>2</sup> also speaks of the same accident occurring in his clinic and lays special stress upon careful introduction of the bougie, and says that when it is found smeared with blood upon withdrawal on no account should inflation be practiced. Gruber <sup>8</sup> remarks that even an abrasion of the epithelial lining of the tube may be followed by emphysema. Traumatic perforation of the drumhead or dislocation of the ossicula, as noticed by Voltolini, <sup>4</sup> need not occur if the anatomy of the tube be considered and its length marked on the bougie, as it is not necessary for the instrument to enter the cavity of the tympanum.

Noyes <sup>9</sup> reported a case of purulent otitis media following the use of bougies and in the ensuing discussion Dr. Weir <sup>9</sup> mentioned another. Regarding this accident these two are the only cases that I have seen reported. The cause of the inflammation in these and in my own case was undoubtedly due to insufficient cleansing of the bougie, whereby morbid material was carried into the tube forming a nidus for suppurative inflammation. Normal mucus from the nose or Eustachian tube forms a fertile pabulum for the growth of micro-organisms. An abrasion or scratch, such as sometimes follows bougieing or catheterization even in the most careful hands, was the point of entrance for the poison.

Dr. Wright (*Journal of the Royal Microscopical Society*) <sup>11</sup> examined the nasal secretion of 10 healthy persons of different ages for bacteria. There were found, in 6 cases, *staphylococcus pyogenes albus*, *aureus*, and *citreus*; in 3, *micrococcus flavus desidens*; in 1, *bacterium tactis aerogenes*; in 1, *penicillium glaucum*; in 1, *micrococcus cereus flavus*; in 1, *micrococcus tetragenus*; and in 3, some undetermined species. The numerical preponderance of suppurative cocci agrees with the results of others.

The advent of Bell's paralysis was a rather unusual result of the acute middle ear affection inasmuch as no necrosis existed and the inflammation was of so mild a degree. Gowers <sup>10</sup>



states: "It is said that the nerve [*facialis*] may be paralyzed when only the lining membrane of the tympanum is inflamed. In such an event we must assume an extension of the inflammation along the chorda tympani or the nerve of the stapedius." It is reasonable to suppose that such must have existed, particularly as the paralysis was so evanescent.

Although previously I had been moderately careful of my aural instruments the lesson of this case has been valuable to me. I now keep my bougies in a sublimate solution, carefully disinfect my catheters by heat and solutions and never expect to have such a result follow their use in the future.

805 Grand Avenue.

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# DOUBLE NUMBER.

THE

# OPHTHALMIC RECORD.

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## AN EXAMINATION OF SOME OF THE MEANS FOR THE DETERMINATION OF HETEROPHORIA.

Written for the Ophthalmic Record by  
GEORGE T. STEVENS, M.D.,  
NEW YORK.

In the new and lively interest now so manifest, not only among oculists but in the medical profession at large, concerning the subject which may be classed under the general topic of heterophoria, an examination of the methods for determining the conditions which come under this class may be timely and perhaps useful.

A thing that is worth doing at all is worth doing well. If we are to search for and treat heterophoria, we should bring to bear upon the subject our best thoughts and our best methods.

Preconceived notions of preference for one or other mode of procedure, as the best and only one, cannot take the place of the outcome of practical investigation, conducted thoughtfully and on a sufficiently extended scale. Perhaps to no one does the subject of the determination of heterophoria present so great difficulties as to one who carefully examines a great number of cases. With broadened experiences come fresh difficulties. The novice or the dogmatist may entertain the most positive views without being at the trouble of assigning a reason for those views. The experienced worker will, however, find himself too

often in the face of serious embarrassments to believe that he has arrived at the knowledge of an easy system in which all the ultimate facts are at his command.

Heterophoria is and will long remain a difficult subject and he who thinks that he has mastered it, or that he has found all that is to be known of a case when he has placed before his patient an instrument and has read off a certain number of degrees of apparent heterophoria, has little appreciation of the labor and thought demanded in a critical examination.

I may here express my doubt in regard to our having at present any one method of determining the tendencies of heterophoria upon which we can exclusively rely.

In my own work I find it necessary to employ a number of methods for nearly every case, and yet I am often in doubt as to the interpretation of the facts so acquired.

Of the various methods and apparatus for determining the tendencies of heterophoria, we have, in this brief article, space for the discussion of only a few. They will be considered, not in the order in which they have been proposed or employed, but in the order which happens to be the most convenient.

*The method of Graefe*, of causing diplopia, by means of a prism held in the hand or placed in a trial frame, while the patient looks at a figure on a card held at the ordinary reading distance, was during many years the almost exclusive method, when the oculist chose to take the trouble of making any examination, for determining the condition known as "insufficiency of the interni."

Of this method I think it need, at the present day, only be said that not only theory but practice proves that no reliable information in respect to the actual state of the eye muscles can be obtained when the eyes are in the act of accommodation. I have elsewhere discussed this principle to such an extent that it need not long engage our attention. Yet I would not counsel an entire abandonment of examinations in accommodation, for we may often find what may be termed negative information, and we may by this means be enabled to check the results of examinations made when the muscles are in a state of relaxation. An example of this will be given toward the close of this article.

An examination in accommodation may thus lead us to reserve our decision until reasons for contradictory tests, made otherwise, may be discovered. Except as such a check, an examination made while the accommodation is exercised should not be regarded as indicating the muscular tendency.

These remarks apply equally to all devices for making muscular tests at near points. A method in which an instrument in the general form of a stereoscope is used to dis-sociate the images, without the intervention of a prism (first suggested in *Annal. d'oculist.*, 1863) even if convex glasses are employed, is still subject to the objection of examining at the near point.

*The method of examining the deviation* which an eye undergoes when excluded from the act of vision by means of a screen, while the other eye is directed to a distant object, while not a recent suggestion is, in its more exact employment, among the more recent methods.

In the examination of the deviations in exclusion, we find two elements; the first being the movement which can be observed by the examiner, as the patient brings one or other eye from exclusion to fixation; the other the lesser movement, which the examiner cannot perceive, but which may be recognized by the patient in the slight apparent movement of the object looked at as the small screen is passed from in front of one eye to the front of the other. This little movement of the object, as observed by the patient, has been called by my friend Dr. Alexander Duane, the parallax test. It is a valuable test and will often serve to reveal a state of important tension when other methods fail. It is not, however a test of universal application, for many persons refuse to recognize the apparent movement of the object even when the examiner can see a distinct movement of the eye. As a collateral test it has great value and one can hardly afford to regard an examination, in which there is a want of agreement between the phorometer tests and the abducting ability, as wholly satisfactory until he has secured the confirmatory evidence of this test. It is my custom to observe the movement of the eye as it changes from exclusion to fixation, and to neutralize the movement with prisms so long as it can be observed by myself. The observation of the patient is then

brought to bear and stronger prisms are, if necessary, used until the patient can detect no further movement in the original direction. A movement in the opposite direction indicates an over-correction. I am accustomed, in order to avoid a multiplicity of words, to record all that is observed by myself and that which is observed by the patient, under the general term of "Deviation in exclusion."

*The rod test* of Mr. Maddox of Edinburg is a beautiful device, having the virtue of extreme simplicity, being perfectly portable and what is not unimportant, it is very cheap. With this rod a luminous object, like the flame of a candle, becomes a long streak of light. The theory of the test is, that this streak of light differs so radically from the true image that the instinctive desire to unite the images of the two eyes is interrupted and the images assume the relations which they would occupy if all efforts for adjustment were eliminated. If this were to prove to be really the case there would be nothing to desire. Unfortunately it is not in this respect free from the disadvantages of the prism method when the prism is held in close relation to the eye. We may see the eye of our patient rotate outward when covered by a screen and re-adjust itself when the screen is passed to the other eye, to the extent of many degrees; still the light streak, when the rod is used, may exactly divide the flame of the candle, thus indicating orthophoria. Such a fact and the more important fact that one may adjust in various directions and in various degrees, preserving the appearance of orthophoria notwithstanding the interposition of prisms of various grades in different positions, clearly indicates the failure to show all the disturbance of muscular balance so far as this test is concerned.

*The stenopaic spherical lens* is a little instrument which I have devised for the purpose of presenting contrasting images to the two eyes. In this case the image of a candle flame seen through the stenopaic opening is a large disc of diffused light.

If, for the purpose of effecting such a diffusion, we employ the uncovered convex spherical lens, a very slight movement of the lens, in or out, up or down, gives to it the effect of a prism in these various directions. As used by myself, the 13 D. convex



lens is covered, except at the optical centre, where a circular opening of about three millimetres diameter acts as a stenopaic window. This small opening serves the double purpose of preventing an adjustment of the lens as a prism and of cutting off the halo in such a manner as to give the impression of an exact disc of light bordered by a frame. A metal disc of the size of the lenses of the trial case, perforated by an opening of the required diameter and supplied with a perfectly centered lens of a small size is a convenient form.

In orthophoria the untransformed image of the candle flame 20 feet distant should be found exactly in the centre of the disc of light. In heterophoria it will tend toward or beyond the border. If the flame sinks below or rises above the centre, while at the same time it deviates laterally, we thereby discover at a glance all the elements of a compound deviating tendency, so far at least as that tendency is manifest. In this important respect the stenopaic lens presents a feature both unique and of much significance. While by other methods of inducing diplopia or contrast we may discover, at a distance of some metres, first one and then the other of the deviating tendencies, lateral or vertical, by this instrument we are enabled to sum up all the elements of these tendencies at once, thus eliminating an important source of error. Although a little time is required in placing the lens properly before the eye, so that the entire disc of light is perceived, the time is well spent if we thereby arrive at more trustworthy conclusions; and in respect to such conclusions the method has some very apparent advantages. The disadvantages are those common to the class of testing instruments held in close relation to the eye, to which disadvantages reference will be made as we proceed.

*The phorometer.* In the course of endeavors to determine with accuracy the tendencies of heterophoria, it was discovered that when diplopia is caused by a prism attached to the face by frames or when held close to the eyes although not attached to the face, every movement of the head causes a variation in the result of the examination, but that if the prism is removed to the distance of a few inches, this element of error is practically removed. I had already attempted to use the spirit level,

attached to the spectacle frame, with no satisfactory results. The phorometer included the spirit level in an instrument which could be placed independently of the patient and at any required distance. Thus was secured accuracy of position of the prisms and freedom from the disturbing results depending upon the position of the head. But beyond these great advantages, the results of examinations furnish information more uniform and more in harmony with evidences furnished by other means than it is possible to obtain by any other method then or now known to me.

With the improved instrument with rotating prisms we are able to obtain our results with greater facility and less expenditure of time than by other methods. Reference will be had to this form of the phorometer as we proceed.

It is an important question whether the instrument which we use may itself induce, or cause a simulation of any of the conditions, the presence or absence of which we desire to know. With this question in view I have made a great number of experiments and observations, carefully recording the results in every case, concerning which I have here only space to mention briefly the general results as relating to the test by the phorometer, and that by either of the methods of examination by instruments held near the eye.

If the phorometer be placed at the distance of about eight inches in front of the eyes to be examined, and adjusted by the spirit level, it cannot be made to represent any heterophoric tendency which does not in reality exist, but it does not of necessity record all that may exist. That is, there may be latent tendencies which the instrument may not show.

In order to convey a clearer idea of my meaning I will give the result of some experiments with my own eyes. This will require a statement of the muscular conditions of the eyes with which the experiments were made. Examinations repeated very frequently during many years have uniformly shown the following conditions:

Hyperphoria, esophoria, exophoria, each  $0^{\circ}$ ; abduction  $8^{\circ}$  or  $9^{\circ}$ ; adduction  $60^{\circ}$  and more; sursumduction each  $3^{\circ}$  and after

a little practice  $4^{\circ}$ ; rotation in all directions free; deviation in exclusion  $0^{\circ}$ ; convergence  $3\frac{1}{2}$  inches.

With the phorometer placed as indicated, looking at a candle flame 20 feet distant, if the prisms are rotated to the horizontal plane, the indicator at the zero point, the lever cannot be moved so as to change the relation of the glasses in the slightest degree without throwing the images out of the horizontal plane. In like manner, if the prisms are placed vertically, the pointer in the  $0^{\circ}$  mark, no change in the position of the prisms is tolerated. The variation of less than a tenth of a degree is quickly discovered and no effort of the eyes serves to bring the images to the vertical line. Thus it appears that in a case in which a long series of examinations have indicated a condition of orthophoria, the phorometer permits of no variation of adjustment, its results being absolute.

If now I place a prism of one or two degrees with the base to the temple before one of the eyes, and close to it, while the phorometer shows the two images in an exact vertical line, the images at first deviate from the vertical line. The eyes, however, soon adjust themselves to the new condition and the images become again vertical. Thus I have latent exophoria of the amount of the glass next the eye. I can now rotate the prism slide of the phorometer to the extent of naturalising the prism near the eye, thus recording the amount of the acquired exophoria, I cannot, however, rotate the slide prisms beyond this extent. In the same way, I can cause an adjustment for a lesser degree of acquired esophoria and a still less degree of hyperphoria. In no case can I force the eyes to accept a correction by the phorometer for more than the value of the glass next the eye. That is, it will in this case reveal the acquired exophoria of a low grade, which can at first be rendered latent, but nothing more. This experiment has been repeated not only upon myself but on scores of others so often that I have no hesitation in saying that, the phorometer, while it may leave much unknown that we would like to know, does not reveal conditions which do not exist. By a gradual rotation of the combined prisms we may make manifest a certain amount of heterophoria, which

was at first latent but we run no risk of inducing an apparent heterophoria.

On the other hand if, instead of the phorometer, a prism of sufficient grade placed near one eye is used to induce vertical diplopia, we may bring before the other eye a prism of a pretty high degree and adjust for it as though the second prism were absent. For example, if a prism of  $8^{\circ}$  is placed vertically before one of my eyes, I have diplopia with the images exactly in the vertical line. Placing then a prism with the base out before the other eye, an adjustment is at once made up to  $8^{\circ}$  or even more. With the base in, a weaker prism serves to throw the images out of the vertical line, only about  $3^{\circ}$  or  $4^{\circ}$  being accepted. If then I produce diplopia in the horizontal direction a second prism can be placed vertically, but the images quickly readjust themselves to the horizontal plane. In this case, however, the prism must not much exceed  $1^{\circ}$ .

The same principle holds in a more or less modified extent in respect to every instrument of this general class which I have examined. After many hundreds of examinations in which I have carefully, and separately for each case, recorded the result as indicated by different instruments, I do not find that there is an exception to the rule that, any prism for inducing diplopia or lens for causing contrast in the size or the form of the two images, when held close to the eye, will admit of a range of adjustments under a variety of circumstances which is extremely liable to lead to error.

If a prism sufficient to induce diplopia is covered so as to prevent transmission of light except at a very small point, the eye cannot run along the surface of the prism and so cannot make as extensive adjustments as when the prism surface is entirely exposed. Dr. Price, of Nashville, called my attention to the fact that this principle would apply also to the cylinder test.

It is true that by thus restricting the point toward which the eye must be directed in order to see the distant object, the range of adjustments with this class of instruments may be modified to an important extent, but, on the other hand, by thus fixing the line of vision of one eye with exact reference to a small point between the eye and the object, the purpose of our

test is in some measure if not, in certain cases, wholly defeated. The diameter of the central opening in the stenopaic lens is such that this objection is in respect to it somewhat modified. The fact that the image is an exact disc and that when the lens is displaced from the axis of vision the image becomes gibbous, permits of an opening somewhat large while the axis of vision can not slide from its true position.

Without dwelling upon these experiments, which every one can make for himself, it is sufficient to recapitulate by saying that in the test of deviation in exclusion, including the parallax, we have an important source of information which may in a considerable number of cases be of invaluable assistance, but not a ready or an easy test, and in a certain proportion of cases not at all available. It is a method, which in every doubtful case should, when possible, form a part of our examination.

The rod constitutes a convenient instrument, useful where a portable one is required and valuable as a provisional and as an additional test.

The stenopaic lens appears to possess all the advantages of any of the testing appliances used in close relation to the eyes, with obvious advantages not possessed by any other.

Diplopia induced by a prism held close to the eye can give only the most unsatisfactory information even at far points.

The phorometer while leaving much for us to learn, is absolutely reliable in respect that it does not apparently reveal conditions which do not exist, while the ease and rapidity with which its results are determined leave nothing in that respect to be desired. It is the instrument on which we must rely for our principal information, the other tests being auxiliary.

We turn now to another class of tests which, as auxiliaries, we cannot afford to ignore. The ability of the various eye muscles to perform their function is an element which we cannot properly disregard in an examination of the relative tensions of these muscles. It is true that we are not to base our determination of the deviating tendencies of the visual lines solely upon the ability of one or other class of muscles to perform certain acts of modification of the relative positions of the visual lines. Yet the ability or the absence of ability to per-



form these acts may have a bearing, direct or indirect upon our interpretation of the phorometric tests.

The ability to overcome prisms by adduction is, in proportion to the ability to accomplish corresponding results by abduction, so considerable and subject to so extensive modification by practice, that it cannot be regarded as having a very clearly defined limit as a test of the condition of the eye muscles. Yet the extent of this ability may often be of assistance in our diagnosis. An ability to overcome by adduction only a fraction of the amount of prisms which might be expected in the condition of orthophoria should be regarded as an important indication. On the contrary a very great adducting ability may be equally suggestive.

The ability to unite images by abduction is a test of far more value.

In the state of equilibrium of the eye muscles this ability has a pretty clearly defined limit. Indeed, if the abducting ability falls short of  $7^{\circ}$  or exceeds  $8^{\circ}$ , we may, as a rule, assume that equilibrium does not exist. In a very important proportion of examinations this test is an element of great importance. If, for instance, by the test of the phorometer, of the stenopaic lens or of the rod we find neither esophoria nor exophoria, and by the test of exclusion there is no deviation, are we to conclude that there is perfect equilibrium? To arrive at such a conclusion would be to fail to find the cause of many a case of asthenopia or other nervous reaction. In such a case as that supposed if we were to find, as we may, not unfrequently, an abduction ability of only  $2^{\circ}$  or  $3^{\circ}$ , we would be right in assuming a faulty muscular condition.

To interpret such a condition as a proof necessarily or exclusively of esophoria would be unwarrantable, for a diminished ability of abduction may be associated with hyperphoria, and indeed it is very often one of the most suggestive indications of that condition.

The following example will illustrate this principle :

A gentleman who had suffered greatly for several years from asthenopia and who had had the advantage of the advice of

distinguished counsel, showed a moderate astigmatism for which he was using properly adjusted glasses.

The muscular tests were in part as follows: Exophoria  $1\frac{1}{2}^{\circ}$ , exophoria in accommodation  $9^{\circ}$ , R. hyperphoria  $\frac{1}{4}^{\circ}$  abduction  $3^{\circ}$ ; adduction  $12^{\circ}$ ; convergence at 4 inches; dev. in exclus., not perceived; rotation in every direction free. The tests for exophoria, esophoria and hyperphoria were the same whether made by the rod or by the phorometer.

The points in this examination which should arrest our attention are these: there is exophoria  $1\frac{1}{2}^{\circ}$  but the abduction is very much less than it should be in orthophoria not to say in exophoria. There is also diminished adducting ability, showing that neither the external nor internal lateral muscles properly perform their functions. The inquiry which should naturally arise is, what influence will account for these irregular phenomena?

If we assume that, as there is exophoria  $1\frac{1}{2}^{\circ}$  and exophoria in accommodation  $8^{\circ}$ , the tests should be interpreted as indicating an outward tendency of the visual lines, we are met by the suggestion that in such case we should have, inasmuch as there is perfect freedom of rotation, an abduction of not less but rather more than  $8^{\circ}$ . If on the contrary, we assume that with an inward tendency as shown by the reduced abduction, the appearance of exophoria is the result of the habitual excessive effort to overcome an inward tendency, we are met by the suggestion that, while exophoria in accommodation is not an uncommon feature of esophoria, we would hardly expect to find as much as is shown here.

If we assume in the third place, that these irregular tests indicate hyperphoria, we have the encouragement that the phorometer shows a low degree, which while not enough of itself to account for the inconsistencies, is enough to suggest that there may be more. Again, exactly this condition of inconsistent tests is a frequent accompaniment of hyperphoria. We may then bring to bear further trials of the functions of the muscles acting vertically. These result in R. sursum.  $2\frac{1}{2}^{\circ}$ , L. sursum.  $2^{\circ}$ . Here then is a confirming test of hyperphoria.

And it is in exactly such situations that we may find the test of sursumduction of much assistance in our research.

It was to this third conclusion, namely, that the inconsistencies pointed to hyperphoria, that I arrived in the case. A number of examinations were made before the patient revealed a full degree of hyperphoria. At once, as soon as it was shown, a prism of this grade was given him. In three days the patient, who found it not necessary to apply the full tension to the vertically acting muscles, showed  $2\frac{1}{2}^{\circ}$  R. hyperp., and after using prism of  $1^{\circ}$  R. H. each eye a week more, he showed  $3\frac{1}{2}^{\circ}$  R. H. The glasses were not strengthened beyond  $1^{\circ}$  each, and after use of these prisms for two weeks tenotomy of the superior rectus of the right eye was done.

A week later there was hyph.  $0^{\circ}$ , esoph.  $0^{\circ}$ , exoph.  $0^{\circ}$ , abd.  $6^{\circ}$ , Ex. in A.  $4^{\circ}$ , and relief to the asthenopia, a relief which has continued during many months.

I have made these somewhat extended notes and suggestions from this case, not to show the already well established fact that corrections of heterophoria may cure asthenopia nor as a guide to any fixed method of examination. I have hoped by it to illustrate the value of a class of tests, the usefulness of which may not be as clearly demonstrated as others and which, if I mistake not, are estimated too lightly by some, while by others they are regarded as indicating by themselves alone, more than can be proved by them.

As I have already passed the bounds which I originally marked out for the length of this paper, I must be exceedingly brief in my reference to the rotating power of the various muscles and to the converging power.

The first of these should never be overlooked nor lightly considered. For in this we may often find an explanation of phenomena otherwise inexplicable. For its discussion I must refer to my recent paper on "antipathy to single vision,"\* where I have presented the subject more fully than the limits of this paper will permit. The second, a function of which much

\*See Transactions, Ophthalmological Section American Medical Association, 1891. Also Archives of Ophthalmology, Vol. xx, No. 3, 1891.

has been said, has not appeared to me to possess all the importance which has been assigned it. This I have so fully discussed elsewhere that I need not enlarge upon it here. It may and should, however, be made an element in a complete examination.

I have thus hastily reviewed a very important subject, leaving out much which might well be said. My design has been not to present a list of the details of examinations, but to suggest some of the more important of the means by which we may obtain information which may be of use to our patients, and to call attention to the important truth that we are not to neglect any of the means at our disposal in the examination of our cases. Above all, if I am able to impress upon my reader the fact that an examination of heterophoria is an act requiring much care and judgment, and the fact that by a single test of any description we rarely gain very important information, I shall have accomplished my purpose.

33 West 33rd St.

## HETEROPHORIA.

A SAFE LINE DRAWN BETWEEN OPERATIVE AND  
NON-OPERATIVE CASES.

BY G. C. SAVAGE, M.D.,

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Of the several theories held by different observers as to the nature of Heterophoria neither one may be absolutely correct to the exclusion of the others. In some cases one theory may be correct; in other cases, another theory; and in another class of cases, a still different theory would be applicable.

A brief review of the different explanations of Heterophoria will not be out of place just here. One view is that there is a congenital feebleness of one muscle as compared with its opposing muscle, this weakness being due either to the fewness of the muscular fibers entering into its formation; or to its faulty attachment to the sclera, this in the weak muscle, being abnormally far from the corneo-scleral junction; or to a want of proper innervation. That there can be truth in this view no one can successfully deny. There can be no case of Heterophoria in which this theory will not explain some of the phenomena.

Another theory denies that Heterophoria is congenital. Its advocates teach that the development and growth of the ocular muscles have been normal, their attachments perfect and their nerve supply all that could be desired. They would teach us that some irritation in or about the eye, or in some organ remote from the eye, excites a spasm, tonic in its nature, in one of a pair of muscles, thus destroying their harmonious action. This spasm existing in the superior rectus would give hyperphoria; in the internal rectus, esophoria; in the external rectus, exophoria; in one of the obliques, a form of Heterophoria first described by the author of this paper.\* This condition would certainly explain some of the phenomena seen in the examination of any case of Heterophoria, and will, therefore, always have its advocates.

\* See Archives of Ophthal. Vol. xx, No. 1, 1891.



The third theory grants that congenitally the muscular apparatus of the eyes may be all right—just what is claimed by the advocates of theory No 2, and yet it claims that the cause of Heterophoria is congenital, in that the maculæ do not occupy corresponding places in the two retinæ. A congenital displacement of the macula up or down in one eye would give hyperphoria; a congenital displacement of the macula, in one or both eyes, outward would give esophoria; and a similar displacement inward would give exophoria. This theory also includes the idea that an abnormal placing of the eyes in their orbits can cause Heterophoria. If one eye (and its orbit) occupies a lower plane than its fellow, there necessarily results a hyperphoria.

If any other theories for Heterophoria have been framed they have not come under my observation. Only two of these theories have before been published so far as I know, the third theory being an original deduction of my own and is here given for what it may be worth.

Something can be said for and against all of these views. Against all of them stands the one fact that, in many cases of horizontal Heterophoria, we have esophoria for distance and exophoria for near.

If asked which of the three I accept I would answer that I believe each one contains a germ of truth, and that, possibly, the conditions included in each co-exist in certain cases.

There may never be unanimity of opinion as to the nature of Heterophoria; but the concession that such a thing exists is already universal. Heterophoria having always had an existence will always continue to exist. In the not very remote past nothing was done for its relief because nothing was known of its existence. Oculists of to-day and of the future must combat this disturber of human comfort.

In order to reach a conclusion as to the form of Heterophoria, and the amount of same, in any given case, and how it should be dealt with, two or more of the several tests now known should be resorted to. In all cases it is my custom, after making a complete correction of any existing error of refraction, to resort to four muscle tests, and when these do not clear my mind of doubt, I try a fifth test. These will be explained in the order in

which I take them. The first is the Maddox rod test. Provided the lenses correcting the errors of focus are alike, the rod  $\frac{3}{4}$  inch long, set in an opening, of corresponding length, through the center of a metal disc, is all that could be desired for this test. It can be readily seen that, if before one eye is a  $+1.00$  and before the other a  $+2.00$ , a serious error could result in the test for vertical Heterophoria. The optical center of the lens is immediately behind the center of the  $\frac{3}{4}$  inch rod. For  $\frac{3}{8}$  of an inch above and below the optical center of the lens the streak of light can be seen, so that, in the case supposed above, there must be a partial or complete correction of an existing hyperphoria, or there must appear an artificial hyperphoria as a result of the difference in prismatic effect of the lenses, provided the axes of vision pass above or below the centers of the two lenses. To counteract this chance for error to creep in and result in bad practice, I conceived the idea of covering all the rod, by pasting paper over it, except  $\frac{1}{8}$  inch of its center. If the streak is seen through this small opening it must be seen through (or very near) the optical center of the lens before that eye, and at the same time the blaze of the candle must be seen through the optical center of the lens before the fellow eye.

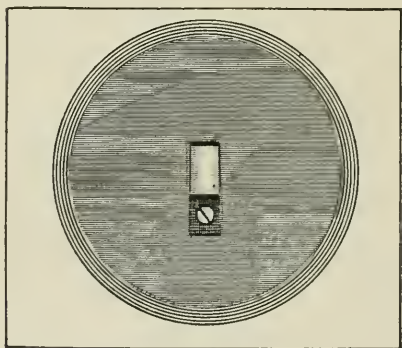


Fig. A.

The chance for error thus eliminated by this modification of the Maddox rod, (fig. A), this test may be resorted to with a considerable degree of confidence. With the lens or combination of lenses, needed for focal correction, placed in the posterior receptacle of the frames, the metal disc con-

taining the rod is placed in the anterior. The lighted candle or gas jet is 20 feet from the patient. The eye whose muscles are to be tested is always the one before which the rod is placed. Let it be the right eye first. The disc is placed vertically. The patient is asked to look at the candle, which he sees distinctly with his left eye; and, at the same time he sees a streak of light

running horizontally. The left eye is the one that is fixed. If there is vertical orthophoria the streak will occupy position 2 in fig. B; if there is right hyperphoria the streak will occupy position 3 in fig. B, or if there is right cataphoria the streak will occupy position 1 in fig. B. The amount of vertical heterophoria is measured by that prism which will throw the streak when occupying positions 1 or 3 into position 2. When right hyperphoria is found, the left eye, when tested in the same way, will show the same degree of cataphoria. The condition of the superior and inferior recti having been thus determined, the disc must be revolved until the rod comes to the horizontal when the streak will become vertical. The

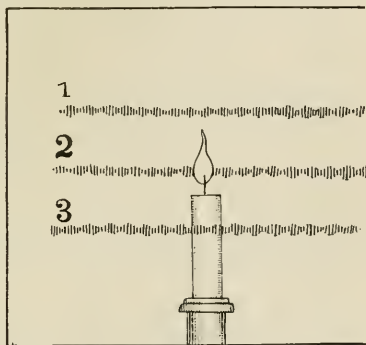


Fig. B.

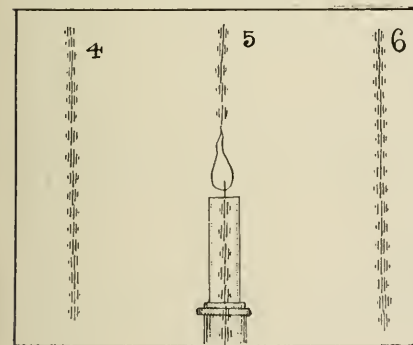


Fig. C.

right eye being first under test again, if there is horizontal orthophoria the streak will be found in position 5 fig. C. if, there is esophoria the streak will go to the right as is shown by 6 fig. C.; or if there is exophoria the streak will go to the left as is shown by 4 fig. C. If there is right esophoria, the left eye tested in the same manner will show esophoria, and exophoria when there was right exophoria. The degree of horizontal heterophoria is determined by that prism which will remove the streak from position 4 or 6 to position 5 in fig. C. The rod test resorted to in the way here described is trustworthy in that it does not show a condition that has no existence. By it we may not be able to judge of the necessity for an operation, if we are to be guided by the line which I will draw later between operative and non-operative

cases. If in any case we find 3 or more degrees of hyperphoria or 10 or more degrees of esophoria or exophoria we can safely conclude that the patient will be a subject for operation either immediately or remotely.

In further investigation of the case the rod is laid aside and the second means of testing is taken up. The Maddox double prism, or better my modification <sup>2</sup> of same, is used. This is placed in the anterior division of test frames, as was the rod, and is so set as to double the candle seen by that eye and make the one in the same vertical plane with the other. While this is being done the fellow eye may be covered by an opaque disc. After the double images have been made and properly placed, the fellow eye is uncovered when at once a third candle comes into view. If there is orthophoria the third image will be in the same vertical plane with the other two and just half way between them. While in this method either eye may be considered as the one under test, it is my custom to take the one in which there is the single image. The double prism being before the right eye the left is then the one to be tested. The middle image going to the left there is left esophoria; going to the right, there is left exophoria; going nearer the lower blaze, there is left hyperphoria, going nearer to the upper blaze, there is left cataphoria. In the same manner the right eye may be tested. The degree of heterophoria is determined by the prism that places the middle image in line with the other two and equidistant from them. The double prism test readily shows any compound muscular error that may exist. To illustrate: there may be left esophoria and left hyperphoria, and when this is the case the middle blaze will not only go to the left of the vertical plane of the other two but it will also approach the horizontal plane of the lower light. The rod cannot, at the same moment, show the two conditions. Of the two tests I consider the rod the more reliable, though often they both are attended by like results.

In continuing the double prism test a card, on which there is

<sup>2</sup> This consists of two separate prisms 6° each bases toward each other and put in rim of same size as those containing lenses in test case, the line of the bases passing exactly through the center of rim.

drawn or printed a single horizontal line with a dot in its center, is held before the patient at the distance of sixteen inches. After placing an opaque disk before one eye, say the left one, while the double prism is allowed to remain before the other, the card is elevated or depressed until the patient sees two lines with equal distinctness, and the dots in the same vertical plane. On removing the disk from before the other eye a third line appears between the other two. If there is orthophoria the middle line will be equally distant from the other two and the three dots will be in the same vertical plane, as is shown in fig. D.

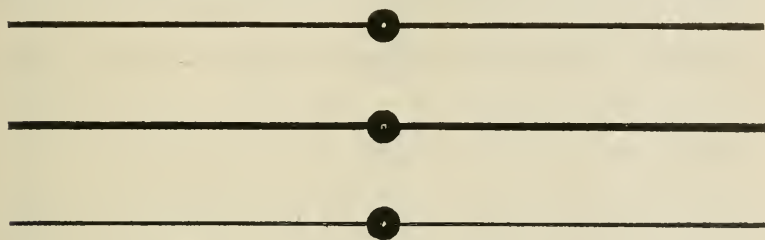


Fig. D.

If there is esophoria the middle dot will be found to the left of the vertical plane of the other two as shown by fig. E; if

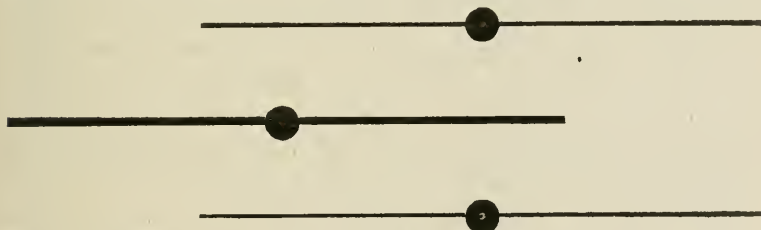


Fig. E.

exophoria, it will go to the right of this plane as is shown by fig. F. When a vertical error exists it is shown by the middle



Fig. F.



line going towards the lower in hyperphoria, as in fig. G, or

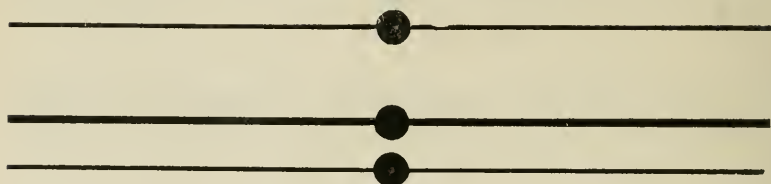


Fig. G.

towards the upper in cataphoria, as in fig. H. As in the distant



Fig. H.

test so in the near the existence of a compound error is shown at the one glance, by the middle line going to the right or left and approaching the top or bottom line.

In this near test with the double prism the same vertical heterophoria is shown as was manifested in the far test, but the degree of error manifested is usually a little more in the near than in the far test. If there is esophoria in the far test there is either a less degree of esophoria or, as is often the case, there is exophoria in the near. In only very few cases is esophoria greater in the near than in the far.

In both the near and the far test with the double prism the patient may see but two images, the vertical error being so great that the middle has blended with either the upper or the lower image. The result is easily reached by holding the opaque disc before first one eye and then the other. With the disc before the eye with the single image if the two lights or two lines are still seen it proves that the middle image was blended with one of the other two. By placing the disc now before the other eye—the one with the double image in it—the top line only is made to disappear, showing hyperphoria to exist in the fellow eye: or if the bottom line is the one to disappear the condition is shown to be cataphoria.

The third, in order, is the *strength* test. I rarely apply this except to the superior and inferior recti, though I am more and more convinced that it also has a real value when applied to the external rectus as well. For testing the strength of the superior and inferior recti a Maddox double prism ( $4^{\circ}$  each) is most convenient. Either eye can be taken first. The patient is made to look first through the upper prism at the candle 20 ft. distant, and it is noted whether two lights, or one, are seen, and, if two, their distance apart. Now the double prism is elevated so that the eye before which it is held looks through the lower prism; and the same note is made as when the prism was in the former position. If the two images are the same distance apart in the two positions of the prism, it shows equal strength on the part of these opposing muscles; but if, when the upper part of the prism is used, the two images are near each other, say 1 or 2 inches apart, while they are 10 or more inches apart when the lower part of the prism is used, there is an excess of power in the superior rectus. The same test applied to the fellow eye would show an excess of power in the inferior rectus. This test is confirmatory of the two preceding tests, and much reliance can be placed in it.

As to the strength test of the external rectus the following is a good rule: if that muscle can overcome a prism of more than  $8^{\circ}$  there is exophoria; if less than  $8^{\circ}$  esophoria is to be suspected. A want of full abducting power may attend a latent and, therefore, uncorrected hyperphoria.

The fourth test is that by means of the plane deep red glass, nothing else being before the eyes except the lenses correcting focal errors. While in a large proportion of cases this test is negative, yet it is one most useful as will be presently shown. The image of the flame (20 feet distant) on the retina of the eye before which the red glass is placed is, of course, greatly modified as compared with the image in the fellow eye. If there is orthophoria, or if there is heterophoria of low or even of moderate degree, the images will be fused and only one blaze will be seen; but if there is heterophoria of high grade the images may not fuse and diplopia results, a red light being seen by one eye and a white light by the other. The patient is asked to fix the white

blaze, and at the same time observe the position of the red blaze and the distance between the two. Fig. I, illustrates the result brought about by this test. The bold, sharply defined candle (7) represents the white one, the pale candles above (8) and to the right (9) of the other represent the red candles. The red glass being first before the right eye the patient at once says he sees two candles, the red one being directly above the white, and that they are from 1 to 4 or more inches apart. This is positive evidence of right cataphoria, or, if the term is objected to, left hyperphoria. The extent of the deviation is measured by that prism which will cause the images to fuse. If there is vertical orthophoria while, at the same time, there is horizontal heterophoria of high degree the red light (9) will appear in the same horizontal plane with the white one and they will be from one to many inches apart (in one of my cases they were 30 inches apart). If there is right esophoria the red candle will be to the right as in fig. I; if right exophoria, then, of course, the red candle would be to the left of the white one.

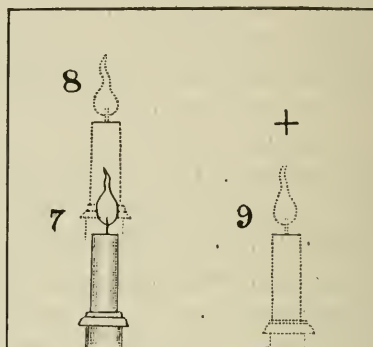


FIG. I.

If a compound muscular error exists, the red glass in suitable cases will show it at a glance. The head being perfectly erect if there is right cataphoria and esophoria (the red glass before the right eye) the red light will be above and to the right of the white, occupying the position + in fig. I. In all of the cases of this class there is, without the interposition of the red glass, binocular single vision as can be most readily determined. Otherwise the test would be without value.

The fifth test is never resorted to when the fourth (the red glass test) results in diplopia; but in some cases responding to the first three tests the results are conflicting, especially as to the vertical heterophoria: To clear the doubt, if possible, a Maddox double prism ( $4^{\circ}$  each), line of bases horizontal, is placed before one eye, while another double prism ( $6^{\circ}$  each), line of bases vertical, is placed before the other eye. On looking in

the direction of the candle 20 feet distant, four candles are seen, two in a vertical plane and two in a horizontal plane. If there is orthophoria these planes will bisect each other, and the four candles will form a perfect diamond. If there is hyperphoria the horizontal plane will cut the vertical nearer the lower candle, sometimes passing through it. If there is a horizontal as well as a vertical heterophoria, the right image may run into the lower one the left one going further away but stopping in same horizontal plane with the latter. Two having gone into one but three images remain, and these form a right angle triangle. In some cases this test has enabled me to do correctly vertical decentering of lenses when the other tests would have led me to do nothing. Such cases require only a small amount of prismatic effect,  $\frac{1}{4}$  to  $\frac{1}{2}$  degree.

It must be confessed that in some cases after all known tests have been resorted to there still remains doubt as to what the true muscular condition is. In such cases it is best to do nothing.

In this paper I have not referred to the Stevens phorometer, one of the best, if not the very best, means of determining heterophoric conditions. The chief objection to it is its cost.

Having thus far discussed heterophoria and some of the tests that may be resorted for its determination I am ready to draw a *safe line between operative and non-operative cases*. On the *operative* side of the line must be placed all cases in which the plane red glass produces diplopia. On the *non operative* side of the line should be placed, at least for a time, all cases of heterophoria in which there is not diplopia when the plane red glass is before one eye. Prisms, or decentered lenses, in position of rest should always be resorted to primarily in all cases falling on the non-operative side of the line. In those cases in which the third theory for heterophoria, given in this paper, is the true one nothing but prisms placed as above will ever be needed. There are cases, however, in which the use of prisms gives only temporary relief, and their strength must be increased from time to time, until, finally, the red glass again tried shows that the patient must be transferred to the operative side of the line.

There are still other cases of heterophoria in which the red

glass will at no time cause diplopia; and yet these cases have not been relieved by prisms carefully chosen and properly placed. As a last means of relief operations must be resorted to.

At the first test a fair number of cases of heterophoria will fall on the operative side of our line; a little later, the wearing of prisms will place a larger number on the operative side where they properly belong; and later still, despairing of relief for certain of our patients by prisms, in spite of the absence of diplopia with the red glass, another contingent must be placed on the operative side of our line.

These three classes of cases will give us abundance of opportunities for dividing tendons and yet leave a considerable number of heterophoric patients enjoying the relief brought them by prisms.

In correcting muscular errors by means of prisms there is no infallible rule we can follow in determining the strength of the prism to be given. In my own practice I often give at once a full correction of the vertical error, but more often begin by giving a  $\frac{1}{2}$  to  $\frac{3}{4}$  correction and later, if the comfort experienced at first does not continue, give the full correction. Vertical prismatic effect of more than  $2^{\circ}$  for each eye should not be given, in fact this much is rarely ever demanded. If more than this is needed the red glass will usually develop a vertical diplopia when an operation should be done at once.

In esophoria I usually give about half the prismatic effect which would seem to be indicated. For instance, the patient has R. esoph.  $8^{\circ}$ , L. esoph.  $8^{\circ}$ . Thus it will be seen that an  $8^{\circ}$  prism would give a full correction, but instead of giving this much prismatic effect, which the eyes would not tolerate, I give only  $4^{\circ}$  correction by placing a prism of  $2^{\circ}$ , base out, before each eye. In exophoria a  $\frac{1}{2}$  to  $\frac{3}{4}$  correction should be given. In esophoria and exophoria prisms stronger than  $3^{\circ}$  should not be prescribed, because of chromatic aberration.

In giving prismatic effect, vertical or horizontal, I resort to decentration of lenses when possible. A little thought enables one in a moment to tell just how much any given lens must be decentered in order to get the desired amount of prismatic effect.



In operating on cases responding to the red glass test a fairly free division of the tendon of the strong muscle must be made. One or more fibres should be left above and below in order to prevent too great an effect both immediately and remotely. The guide as to when enough is done short of a complete division tendon is a fusion of the red and white lights. While operating the test should be resorted to, to show what effect has been gained by the cutting already done. In no case should the red light be made to cross to the opposite side of the white light as will nearly always be the case when the whole tendon has been severed. If a complete tenotomy is done accidentally or on purpose, an advancing stitch is nearly always necessary.

In cases demanding an operation when there is no response to the red glass test, the division of the tendon must be done with still greater care else an over-effect will result.

## CONSERVATIVE SURGERY OF THE EYE.

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*Read before the Canada Medical Association September 15th. 1891,*  
and sent to the Ophthalmic Record for Publication.

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There is probably no disease of the eye so dreaded by the ophthalmologist as the one called sympathetic ophthalmia. Unlike other inflammatory affections of the eye, which for the most part are revealed by honest out-spoken symptoms, of themselves almost suggestive of suitable remedies, and characterized by a willingness to gracefully yield to the recuperative powers of nature, aided perhaps by rational therapeutics, we see in sympathetic ophthalmitis a sort of "snake in the grass" among ocular diseases, an insidious process which may have advanced far in its destructive course before its presence is even suspected, unless perchance the subject happens to be under the daily observation of some one keenly alive to the danger; and even then it is doubtful whether a genuine plastic Iridocyclitis of sympathetic origin can be arrested or dealt with successfully, when it has once gained ever so small a foothold in the sympathizing eye.

Taking into consideration the subtle character of this disease, its virulence when once established, and when we bear in mind that up to the present time no reliable method of treatment is recognized, and that this disease usually means hopeless blindness of both eyes, for the exciting eye has generally been lost by the original disease or injury through which it obtained its malevolent influence, we are in a position to understand the anxiety of ophthalmic surgeons to prevent the onset of a morbid condition over which they have so little control. Fortunately an efficient method of prevention was long ago discovered, in the early enucleation of the injured eye. and it may be laid down as a law that sympathetic ophthalmia seldom occurs if the diseased

or injured eye be enucleated before any manifestations of sympathetic disease have occurred in the sound one. I say seldom, because it is well known that a plastic Iridocyclitis occasionally occurs at any period, up to three or four weeks after enucleation of the injured eye. A case of this kind I may be excused for placing on record, since it is of great clinical interest, and has not yet been published. In the month of October, 1885 a boy 13 years of age was brought to the Montreal General Hospital on account of an injury to the left eye, received three weeks previously. He was engaged in piling cordwood, when a round stick fell end foremost from above, striking the upper surface of the eye and causing an extensive rupture of the eyeball through the ciliary region, and *parallel with the lower margin of the cornea*, just as commonly happens *above* the cornea when the force comes from below the horizontal meridian of the eyeball.

The ruptured and shrinking eyeball had already lapsed into a state of chronic Iridocyclitis, and being lost for all visual purposes an immediate enucleation was performed. The patient remained under observation for about a week, during which time the sound eye was carefully examined for possible sympathetic trouble, but of this there was no discoverable sign. A month later he was brought again, a distance of some two hundred miles, to the Hospital on account of failing vision in the remaining eye, which was found to be affected with a plastic iritis, the first signs of which were noticed by his watchful father three weeks after his return home, or four weeks from the date of enucleation. A plastic Iritis with extensive posterior synechiæ coming on insidiously, almost without pain and with great impairment of vision were the principal features of the inflammatory process, now effecting the previously sound eye. The eye made a good recovery with a six weeks course of treatment, illustrating the rule that, *when sympathetic ophthalmia breaks out after the exciting eye has been removed, it occurs in a less virulent form than where enucleation has been delayed until the sympathetic affection has actually made its appearance.*

This fact appears to be one of very great importance, not only on account of its prognostic value, but because it gives us an insight as to the nature of the disease, which fully establishes

the rationale of its prevention. It is the strongest possible proof that the exciting eye continues to supply some morbid influence to its congener so long as it remains undisturbed. This might of course be the case whichever theory of the etiology of sympathetic ophthalmia we choose to accept, but since we may discard as untenable every explanation of the nature and origin of so-called sympathetic ophthalmia, excepting the bacterial, we have simplified the problem of prevention, at least to the extent of directing our attack against an enemy no longer in ambush, but entrenched in a camp, easily accessible to our surgical forces. Speaking of the theories of sympathetic ophthalmia, I have always been at a loss to understand how the neuropathic theory ever came to be generally accepted, its most substantial support being an isolated observation or two (probably imaginary) on the part of an ophthalmologist of high reputation in his day, that sympathetic ophthalmia commenced in the sympathizing eye at a point symmetrical with the seat of injury in the exciting eye. The result of this observation shows how a fallacy emanating from some high authority may tend to retard the acquisition of truth. There is certainly nothing else in physiology or in neural pathology at all parallel with the phenomena of sympathetic ophthalmia. If the bacterial explanation be accepted (and even of this positive proof is wanting) we have in it an adequate explanation of the lapse of time between the original injury and the outbreak of sympathetic disease, as well as for the immunity which an early enucleation commonly secures, and also of the less virulent form which we occasionally meet with after timely enucleation. But we also have in these facts, a forcible intimation that some less radical procedure might accomplish the purpose of enucleation with equal certainty. Here, if anywhere, conservative surgery presents its strongest claims. Ask anyone who has submitted to enucleation how much he would have preferred a harmless though maimed eyeball to the artificial one. Observe how much better the appearance of an artificial eye worn over a shrunken globe or a good stump, than where enucleation has been performed.

This brings us to the points I wish more particularly to empha-

size. It is, I believe, generally conceded that children and young people are more liable to sympathetic ophthalmia than those of maturer years. Whether this belief comes from the greater liability of children to accidents of a certain kind, or whether there actually exists in them a stronger tendency to develop sympathetic trouble, I do not pretend to know, but that very many children do become the victims of sympathetic ophthalmia is a matter of common observation. It is also true that in children a threatened sympathetic trouble becomes a cause for still greater anxiety, on account of the difficulty of making accurate observations and detecting slight changes in the eyes of this class of patients.

For these and perhaps other reasons I am aware that many ophthalmic surgeons, especially in England, do not hesitate to advise the removal of injured eyes in children, whenever the sound eye may be considered to run even a moderate risk of sympathetic ophthalmia. A few years ago I myself would hardly have questioned the soundness of this practice, but I have gradually learned to take a very different view of this subject, and indeed I am prepared to maintain that *the eye of a child should never be enucleated on account of an injury unless sympathetic ophthalmia has actually occurred*. In the first place, it is an operation, which irrevocably fastens upon the unfortunate a lifelong disfigurement and one which intensifies with advancing years, for no matter how carefully an artificial eye may be adjusted, the conjunctival sac fails to develop normally and there will in many cases, after the eye of a young child has been removed, come a time when it will no longer be possible to adapt an artificial eye to look presentable. Too often, perhaps through negligence, this period is reached long before the child has reached maturity. It is easy to understand how parents hesitate to accept the counsels of prudence in the face of a disaster so grievous as the sacrifice of an eyeball, no wonder they run the fatal risk rather than agree to a lifelong mutilation of their offspring.

It is the surgeon's task to find a safe way out of the dilemma. It is here that conservative surgery of the eye may achieve its greatest triumphs.



We have only to concern ourselves at present with serious injuries of the eye, which we may divide into two classes:—

A. Those which are likely to be followed by great damage to or total loss of vision.

B. Those in which vision is obviously destroyed.

In the first of these two classes, the surgeon will be in duty bound to spare no pains in order to save as much vision as possible, and on no account to sacrifice the eyeball, if there is a reasonable chance of protecting the other eye from sympathetic trouble in any other way. In the second class of cases, two courses are open to him, they are, either to remove the hopelessly blind eye immediately or to preserve so much of it as will afford moveable stump for an artificial eye to rest upon.

In class A will be found far the greater number of serious injuries of the eyeball, and it is in dealing with this class that the surgeon's knowledge, skill and judgment and experience will be most severely tested.

One of the leading English authorities of the present day says, that "When the wound is in the dangerous region" (the ciliary region) and complicated with cataract, excision is without doubt the safest course in all cases." He furthermore implies that excision should often be done, even when the wound is entirely corneal with injury of iris and lens. He says, "If the corneal wound be large and irregular, excision is necessary," the same too "if the corneal wound be small, and persistent irritation ensue." I cannot concur in any of these statements, since with antiseptic precautions there are many cases in the first category which will turn out well, if all entangled iris or other portions of the prolapsed uvea are carefully removed, and the wound united by means of one or more fine silk sutures. In addition to this, cold antiseptic dressings and other well known antiphlogistic measures may be required for some time afterwards, and the wounded lens if not sufficiently soft and opaque to be extracted, when first seen, may subsequently require to be removed either partially or completely. When the wound is entirely corneal and properly managed from the first, it rarely happens that the eye becomes a source of danger to its fellow.

If, in the course of two or three weeks, the condition known

as chronic Irido-cyclitis should appear, excision may still be avoided by substituting resection of the optic nerve or evisceration of the eyeball, either of which would, especially in young persons, be preferable to enucleation of the globe. Of the two procedures I decidedly favor resection of the optic nerve, if the condition of the injured eye is such as to indicate grave danger of sympathetic ophthalmia, more particularly if at the same time, the eye bids fair to retain a presentable appearance. On other hand, evisceration and the insertion of an artificial vitreous might well be done when the anterior part of the eyeball has been greatly damaged, and when with a lost and collapsing eye, a sufficient time has not elapsed to endanger its fellow.

With regard to resection of the optic nerve not protecting the sound eye against sympathetic ophthalmia, as efficiently as enucleation, the opponents of the former operation claim to have seen sympathetic ophthalmia follow resection of the nerve, and hence they say the operation is not to be depended on. I answer, the same is true of enucleation. Where is the ophthalmic surgeon of long experience, who has not seen sympathetic ophthalmia break out several days or weeks after enucleation? Let us then be fair in our judgment of the more scientific and more humane operation, at least until wider experience has pronounced against it. Let us be certain, too, that bad results are not due to a badly performed operation. Every one knows how much the result of any surgical operation depends upon attention to detail. For some years past I have always endeavored to repair wounds of the eye, no matter what their situation or extent, if there appears to be reasonable prospect of preserving a presentable looking eye. If after two or three weeks there seemed to be real danger of sympathetic ophthalmia, I have resorted to resection of the optic nerve in preference to enucleation, and I have not once been disappointed in the result. In performing this operation, I pay the most scrupulous attention to antiseptic precautions, first washing the face and especially the eyelids with soap and water, then both these and the entire conjunctiva with per-chloride solution. The patient must be anaesthetized, and all the instruments used are to be thoroughly aseptic as well as everything else likely to be used about the

eye. As for the operation it is commenced by dividing close to the ocular attachment, either internal or external rectus. With an ordinary fixing-forceps the eye is then rotated strongly outward or inward as the case may be, and the closed blades of a pair of blunt pointed excision scissors, are carried far back, nearly to the apex of the orbit, along the optic nerve, this is then divided about half an inch behind the globe. There is then no difficulty in further rotating the globe till the ocular end of the nerve comes into view, so that it may be cut off close to the eyeball and the resected portion lifted away. Bleeding may be pretty free at first, but is readily checked by pressure of an aseptic morsel of sponge, carried with the fixing forceps to the space behind the eye. When bleeding has pretty well ceased, the deep end of the nerve is syringed for a few minutes with solution of per-chloride 1-2000. Finally, the retracted tendon is fished up with a small double hook and re-united by a central and two lateral points of suture and the eye dressed with antiseptic dressing. It is an important point not to pass the sutures through the conjunctiva on the scleral side of the wound. I use fine needles and No. 2 silk. Done in this way, only a moderate reaction follows, and the eye is practically well by the fifth day, when the stitches may be removed.

In the second class of severe injuries (Class B.) the eyeball is soft from large loss of vitreous, etc. and the sclerotic cavity is more or less filled with blood, under these circumstances vision being hopelessly lost. I resort to immediate evisceration, first cutting away the cornea and enough of the sclerotic on either side to make a pointed lozenge shaped aperture. This will admit of inserting an artificial vitreous. After washing out all the contents of the sclera, and waiting until bleeding has entirely ceased, the glass globe may be inserted and the transverse wound in the sclerotic united with four black silk sutures (No. 2 iron dyed), a conjunctival suture may also be placed at either angle. Finally the conjunctiva is again thoroughly washed with per-chloride solution, dusted with finely powdered iodoform, and an absorbent cotton pad saturated with the same applied by means of a compressive bandage. A considerable reaction may be expected, with some pain, for a few days. To an adult I give

ten grains of phenacetin at night, or morphia if the pain is severe. At the end of 48 hours the bandage may be removed. If all goes well the scleral and conjunctival wound will be found united and the conjunctiva free from secretion. If there is much swelling, iced compresses, soaked in weak perchloride solution should now be used until the pain subsides.

Managed in this way the operation of inserting an artificial vitreous has been entirely satisfactory. I have not met with any of the accidents which we read about and which I am inclined to think depend largely on want of attention to details. The mistakes being—1st. in imperfect antisepsis, at every step of the operation this must be most vigorous.

2nd. In faulty removal of cornea, the aperture being made circular instead of elongated.

3rd Incomplete arrest of hemorrhage before inserting the glass globe.

4th. In the insertion of too large a globe. The latter should always lie quite loosely in the scleral cavity.

I do not, of course, pretend to have covered the whole ground included in the title of this paper, but enough has been said to indicate the propriety of reform in the matter of enucleating eyes, which might in all probability be safely retained. I have not discussed that large class of cases in which foreign bodies are hidden within the eyeball, but in these also I am under the impression that enucleation is often unnecessarily performed. I hope at some future time to have the privilege of dealing with this part of the subject more fully than the present occasion will allow. Before closing permit me to show you two patients upon whom I have recently operated.

The first of these is a stone breaker. On the 8th. of Aug. I removed from one of his eyes a rough fragment of iron, about the size of half a small filbert. It had penetrated through the centre of the cornea and of course enormously damaged the eye. Three weeks later the eyeball was becoming squared and had all the appearance of a dangerous eye, the other eye as yet however showing no signs of sympathetic trouble. I eviscerated the injured eye and inserted an artificial vitreous, according to principles already laid down. This was two and a half weeks

ago. You see the result: he is now wearing an artificial eye. It would puzzle any one but an expert to tell which is which. The uninjured eye remains strong and well.

The second case illustrates a class of injury not at all uncommon, but too often badly managed.

A week ago to-day this young man came to me a few minutes after having had the right eye cut by an exploding soda water bottle. There was a penetrating wound about four millimeters in length at the inner sclero-corneal junction, but not through the cornea. Through the wound a knuckle of iris presented. I tried to replace it with spatula and fine probe, but it always popped out again, I then punctured the prolaps with a cataract knife thus drawing off the aqueous humor; after this I succeeded easily in replacing the iris into the chamber and instilled a drop of eserine solution, four grains to the ounce. A compressive bandage over both eyes for three or four days constituted the after treatment. There is now scarcely a trace of the injury. The pupil is slightly oval and a little displaced toward the seat of injury, otherwise the eye seems perfect. The interesting point in this case is effect of drawing off the aqueous humour. The prolapse could not be restrained until this had been done and I believe the eserine was of use in helping to prevent a recurrence of the prolapse before the wound became firmly united.

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## RESECTION OF THE OPTIC NERVE.

Written for the Ophthalmic Record by

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Any experience for or against this important subject will be gladly welcomed by all who have paid any attention to it. In the September number of the *Ophthalmic Record* I referred to Drs. DeWecker's and Abadie's remarks on this matter. In the *Recueil D'Ophthalmologie* for October, Dr. Trauseau gives his experience of a case where he had performed the operation of resection of the optic nerve which was a failure. I have translated his few remarks as literally as possible.

"In April 1891, Dr. Trauseau reported the case of a patient who was attacked by sympathetic ophthalmia, in spite of a resection of the optic nerve operated purposely to prevent it. He goes on to say, that the fact as he reported it afforded a double interest, in that it proved: First. That the resection of the nerve does not necessarily prevent the ophthalmitis. Second, That enucleation after symptoms of sympathetic ophthalmia have arisen may prevent loss of vision. The patient, almost blind at the time of the enucleation, had after the operation a rapid recovery, and better vision ( $\frac{1}{3}$  to  $\frac{1}{2}$ ) than I could have believed possible. Here then is a case in which the resection has not prevented the developments of sympathetic ophthalmia, but which was greatly improved and apparently cured by enucleation. Unfortunately this optimistic prognosis is not realized. The patient left the hospital at the end of May with a visual acuity equal to  $\frac{2}{3}$ , but returned in the middle of July for me to find a very serious relapse (plastic iritis, abundant pupillary exudation,) and since that time, in spite of the most vigorous care, I have not been able to increase his vision. The patient reads only the first line of the scale at 2m. 50.

"Very soon I expect to perform an iridectomy which I trust will give him slightly better vision. By these few remarks I can keep informed those ophthalmic surgeons who interest themselves in this subject. The failure of the resection of the optic nerve made in the hope to prevent sympathetic ophthalmia is clearly shown, but we must also recognize the fact that the subsequent enucleation, which at first acted marvelously for sometime, did not put the patient beyond a relapse. I believe that, had the enucleation been performed instead of resection, the patient would have good vision to day."

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## OPHTHALMIC THERAPEUTICS.

Translated for the Ophthalmic Record by

F. H. PRICHARD, M.D.

NORWALK, OHIO.

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## ARISTOL IN OCULAR THERAPEUTICS.

Dr. Wallace (*La Riforma Medica*, No. 185, 1891), has used aristol in ocular therapeutics on account of its lightness, its uniformity and fine state of pulverization, for the irritation produced by insufficiently pulverized particles of iodoform often undoes the good produced. Besides this aristol seems to have a less irritating action than iodoform and it may be freely used without fear of producing irritation or reaction. Its slight odor is another advantage. The diseases in which aristol exercises its best results are, follicular conjunctivitis, phlyctenular conjunctivitis and keratitis, marginal blepharitis and corneal ulcers. It is an excellent exsiccant dressing after enucleation of the eye-ball. In epithelioma of the eye-lid the writer has seen it thin the secretions of the ulcerating surface, but it exercises no other influence upon the course of the lesion. In a case of lachrymal abscess with a subsequent broad and necrobiotic ulcer with a diameter of one centimetre, a week's use of aristol caused the ulcer to entirely heal. In a case of enucleation of

the eye-ball aristol was immediately applied to the orbital cavity. Two days after the lids were opened and not a trace of secretion could be seen; the aristol collected at the conjunctival aperture and left the rest dry. It is remarkable the rapidity with which phlyctenular diseases yield to aristol. and, although the application causes slight irritation, pain was never observed to follow its use. Here is the broadest field, according to the author, for its use. Calomel, which is ordinarily recommended, is by no means free from inconveniences, for in such cases the internal administration of iodine-salts being indicated, calomel applied to the conjunctiva may induce necrosis, while aristol does not present this contra-indication. The writer has tried it in papillary trachoma without good results; it has even augmented the photophobia, lachrymation and corneal opacity. This he regards more due to neglecting other important therapeutic rules than to the hurtful action of the aristol itself. On the contrary, in follicular trachoma he has gotten the best results.

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#### PROPHYLAXIS AND TREATMENT OF PURULENT OPHTHALMIA OF THE NEW BORN.

Dr. Dehenne (*Le Bulletin Médical*, No. 84, 1891). regards antiseptics of the maternal genitals the best prophylaxis of ophthalmia neonatorum. He also employs by instillation either a 1:2000 solution of corrosive sublimate or a drop of the following solution:

R. Argent. nitric. crystallizat.  $\text{dgm. } 10$  (gr. jss)  
 Aquae destillat.  $\text{gm. } 20$  (fl.  $\bar{5}$  v)

1. If there be tumefaction of the eye-lids present he applies wads of absorbent cotton to the eyes which have been dipped in ice-water, or absorbent cotton with small pieces of ice placed between. These should be discontinued as soon as the swelling has disappeared.

2. The eyes should be cleansed frequently, at least once an hour with a piece of absorbent cotton dipped in Van Swieten's solution.

3. Instill morning and evening into both eyes 4-5 drops of the following:

R. Eserin. sulphat neutr. dgm. 10 (gr. jss).

Aquae distillat gm. 20 (fl. 5 v).

Once a day touch the conjunctiva of the lid with a small pair of forceps, with the tip rolled with cotton and dipped in the following:

R. Argent. nitr. crystalizat. dgm. 50 (grs. viii).

Aquae destillat. gm. 20 (fl. 5 v).

More concentrated solutions are useless. Strong caustics in the stick should never be used, as they produce sloughings of the epithelial surface of the cornea and open the door of admission to the various streptococci and gonococci, which lurk in the conjunctival culs-de-sac.

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#### EMBOLISM OF THE ARTERIA CUTRALIS RETINAE

##### CURED BY MESSAGE.

Dr. Fischer, of Leipsic (*Deutsche Med. Wrochenschr* No. 23, 1891, *Norsk Magazin for Laegervidenskaben*, No. 8, 1891), reports a case of embolism of the arteria centralis retinae cured by massage. Several measures, for example iridectomy have been proposed to lower the intraocular resistance and blood pressure, thus allowing fresh blood to flow in. But without any notable results. Other means have produced a cure. For example Wood-White (*Oph. Rev.* I. 1882), remarked in a case, that by pressure upon the eye-ball, the empty retinal vessels would refill, the upper branches first and the lower one two or three minutes later. The sight improved and in the course of two days the eye was apparently normal. Besides this Mules, in *Oph. Soc. of the United Kingdom* 6 July, 1888; Hirschberg, in *Centralbl. f. Augenheilkunde* xii, 1888, p. 297; Hilbert, in *Memorabilien*, 1889, p. 457, each reported a case of recent embolism where the eye-sight returned on massaging the eye-ball.

The writer's case is that of a 38 year old woman, who came to him February 8th, after having been blind in the right eye for two hours. Ophthalmoscopic examination revealed the



retina already gray, especially in the region of the macula lutea, in which centre, as usual, a distinct and red point was seen. The vessels were small and in the two venous trunks the blood-current was apparently interrupted. It was striking how the small blood cylinders changed place on pressing on the eye-ball in one or another direction. Taking this as a therapeutic hint the writer continued the massage and in a short time the patient cried out that light began to be perceptible in the lower portion of the eye. On immediate examination with the ophthalmoscope the vessels of the upper portion of the retina were found normally full. The massage was continued, finally only a central scotoma remained which gave way to an annular scotoma, while the peripheral and central vision was normal. The origin of the embolus could not have been in a cardiac affection as none was present, and hence the writer thinks it originated in the carotid artery. In support of this he cites the migraine present in his case and directs attention to Oppenheim's treatise—*Charité Annalen*, 1890, xv, S. 290—where a case of migraine is recorded with anatomically demonstrable thrombosis of the carotid artery.

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#### TREATMENT OF ULCERATIONS OF THE CORNEA.

Dr. Valude, of Paris, (*Wiener Med. Presse*, No. 10, 1891—*Ugeskrift for Læger*, Nos. 4-5, 1891), instead of cauterizing grave corneal ulcers with hypopyon and evacuating the pus by paracentesis, the writer advises the use of a dry occlusive dressing, which is changed at long intervals. He washes out the eye with a 1:5000 solution of corrosive sublimate, applies a dry dressing, consisting of a layer of salol gauze and another of cotton. The whole is fixed by means of a stiff bandage, which after drying exercises a uniform pressure. This is allowed to remain on 3-5 days and then changed. This treatment in a series of cases has given excellent results; it is fully as efficacious in corneal ulcerations with or without hypopyon as in scrofulous corneal ulcers. Under this dressing first and foremost the ciliary pains and vascularity disappear, the hypopyon



decreases gradually and finally disappears entirely. The ulcers lose their gray appearance, become transparent, decrease more and more in size and leave, after healing, only a little leucoma instead of the broad cicatrix which remains after cauterization.

#### RESULTS OF OPERATIONS WITH THE MAGNET IN OPHTHALMOLOGY.

Dr. Hirschberg, (*Nordisk Ophthalm. Tidsskr. Bd. 3. H. 3*), publishes the results of his operations with the magnet in ophthalmiatric practice. An iron splinter which penetrates the eye rarely has force enough remaining to pass through the posterior wall. In the majority of cases it bounds off towards the sclerotic either to fall into the vitreous body or into some portion of the fundus. If it remains here and is aseptic and small—1–2 mm. in diameter—it may remain there a long time, possibly the entire life time of the patient, without causing any irritation. The splinter may, after years—in one case 16 years, fall from the capsule and be the source of new irritation. If it remain encapsuled it may disturb vision by the formation of connective tissue in the retina. A splinter of quite considerable dimensions—in one case 4 mm. length and 30 mgms. weight—may cause within 2 years complete blindness of the eye involved fully as well as at first. An iron splinter situated on the fundus of the eye may partly rust away; the iris takes on a rust-colored appearance, which shows how far the iron compounds may spread in the eye. The rust layers seem to protect the central portion of the splinter from further rusting. The writer has removed splinters which have remained 10—20—30 years in eyes.

When an iron splinter of any size is situated in the vitreous body, it always produces irritation, partly of a mechanical and partly of a chemical nature and the eye is nearly always lost. Before the introduction of the magnet it was scarcely possible to remove a splinter from the vitreous body with conservation of sight. But within the last ten years the writer has succeeded in removing, with the help of the magnet, iron splinters four

times from the vitreous body, and from such a depth where one can not well work with scissors and forceps, and with such satisfactory results that the sight was quite good four to ten years after. Three times a certain amount of sight remained, six times the eye-ball preserved its form with some perception of light. During his first ten year's use of the magnet the writer obtained no satisfactory results, while in the next decade, thirteen cases with varying results were treated, seven satisfactorily and six with slight results. He gives the following results and methods of procedure:

If the lesion is entirely recent and the path of the splinter open and accessible, one should immediately sound the interior of the eye with the magnet. But it is hardly to be recommended to push in through a small corneal wound and the lens.

If one will force a way through to an iron splinter in the posterior portion of the eye-ball, then this is best done by a meridional incision through the equatorial region of the eye-ball. This is the typical method of proceeding. To penetrate through an incision at the edge of the cornea is indicated in two rare conditions, namely: 1. when the splinter is situated behind the young and soft lens which is to be removed with the foreign body. If the splinter has caused traumatic catarrh of the vitreous body and choroid it would seem most advisable, especially in elderly patients, to first remove the foreign body by the meridional incision, and then after a few weeks extract the lens. It is rare that one is able to dissect out a splinter from the inside of the eye through the eye-ball. In such a case careful decision as to the seat of the splinter is necessary, tenotomy of the rectus may be done, if required. In every recent case one should operate as soon as possible. The operation may be called primary as long as there is no irritative condition of the eye present; secondary, when it is done during irritative conditions dependent on the splinter; tertiary, when the original inflammation is healed and the presence of the foreign body gives rise again to inflammation, which may necessitate operative interference. In all three stages the writer has obtained good results from the meridional incision. He calls a splinter weighing 20-30 mgms. small, here a second-

ary or tertiary operation may still give a satisfactory result. Moderately large is a splinter of 50–180 mgm., a primary operation can only yield good results here. Very large is a splinter over 200 mgms. in such a case, the sight of the eye involved can not be saved and even the preservation of the eye is doubtful. It is more important than size whether the body be aseptic or not.

The meridional incision should be done under anaesthesia and strict antisepsis. A v. Graefe's cataract knife should be used, a fine scalpel or lance will also suffice. The narrow cataract knife is pushed some few millimetres into the vitreous body and the incision, 5–6 mm. in length is completed, holding the knife at an angle. In every case the vitreous body should be split in to the splinter before one can be certain that one can remove it. The conjunctival wound is closed by sutures. The patient should keep his bed for about ten days after the operation. The first dressing should be allowed to remain on one to two days. The patient should not be permitted to leave the hospital before 4–6 weeks after the operation. In examination one sometimes finds and, especially in the vitreous body, small and roundish air-bubbles which will give a clear reflex. The success of the operation depends upon the accuracy with which the situation of the splinter can be made out. In every recent case where a splinter is thought to be in the most posterior portion of the eye-ball, the magnet should be used. Incautious probing is by no means advisable but careful probing may be done without injury. Also in the second stage, where there is inflammation and circumscribed suppuration, operation is to be recommended. Direct reflected sunlight is the best means of searching for the splinter. If one discover a small speck in the fundus of the eye and without irritative phenomena and the sight remaining good or even bearable, it should not be disturbed, unless it fall out of its capsule and cause trouble. If it be larger than the pupil, then operate with the magnet, even if there be no irritation, for the sight will sooner or later be lost. The writer records forty-one cases of foreign bodies in the eye, respectively in the most posterior portion of the eye-ball. In 29 of them extraction by the magnet succeeded; in 19 on the contrary, the attempts were

unsuccessful and here later enucleation became necessary. In 7 of these cases it was seen after enucleation that the splinter was buried so firmly that the magnet could not pull it out. Among the 29 cases there were 4 cases (2 primary, 1 secondary and 1 tertiary operation), where good or quite good sight resulted. These were from 1-8½ years under observation; in 3 of them the result was quite good, while in but 6 of them one only succeeded in preserving the form of the eye, i. e., to avoid enucleation. while the sight was lost. In 16 of the cases the eye was necessarily enucleated, although the splinter was extracted by means of the magnet. Often the splinter was very large or septic. Besides these two cases the writer has performed probing of the vitreous body with the magnet in 24 cases, where there was a possibility of a foreign body. In none of these was a foreign body found. In 8 of them enucleation showed that none was in the eye; in one a foreign body, but no iron splinter was found. In 6 of them, recovery with good sight, in 4 moderate or poor sight, and in 5 preservation of the form of the eye-ball were obtained. Hence the writer concludes that careful probing of the most posterior portion of the eye is without danger.

## MISCELLANEOUS FACTS REGARDING EXTRACTION OF CATARACT.

Written for the Ophthalmic Record by  
G. STERLING RYERSON, M. D., C. M., F. R. C. S.,  
Professor of Ophthalmology in Trinity Medical College, Toronto.

On December 4, 1891, I made my two hundred and fiftieth operation for extraction of cataract. This event sets me thinking of the "Hairbreadth 'scapes and moving accidents" which have befallen me in my operative experience.

While statistical tables are of little interest, such an account may be of some use to your younger readers at any rate. It may be said of these cases that:—

The hornet's sting is a red-hot thing  
And gets there without fail;  
It points a moral in language oral,  
And likewise adorns a tail.

Failure in extraction of cataract is indeed a hornet's sting.

Marginal suppuration of the wound I have met with in several cases. I believe it to be due in some cases to too small a corneal wound, and the resulting bruising of the margins during the exit of the lens. In others, to enfeebled nutrition, and in others again to infection. I have latterly used carbolic acid, 1 in 20, applied carefully with a probe to the wound only with good success. Washing out the eye with hot boric acid solution is practised in the intervals. Some ten years ago I operated on a mature, and in most respects particularly favorable, case. She had slight lachrymal catarrh. On the second day the wound was infected, and a large portion of the cornea sloughed. I hardly need say, that I have avoided operations when lachrymal trouble exists since that time. I might also add that the infective process was not so well known then as now.

Another very disappointing case was that of an old lady, for whom I made an extraction in 1886. I then followed the old Morefields plan of not opening the eye for four or five days.



I now examine it every day. She had complained of no pain or uneasiness. There was trifling discharge on the pads. I opened the eye-lids on the fourth day to find to my horror an eye full of pus. How it got there, has always been a mystery to me, the eye was most carefully prepared antiseptically, and the instruments absolutely clean.

Another case of cataract was that of a man 78 years of age, who had a cataract for seven or eight years in his right eye. He came to me in 1889 for failure of the other eye. I found an immature cataract in the left eye, and a hyper-mature one in the right. I advised extraction which was agreed to. The following day, assisted by Dr. Gibb Wesharb, I did the operating. I made an upward section without iridectomy. Expecting a somewhat shrunken lens I made rather a small section, but was somewhat surprised at the extreme ease with which the lens popped out. Immediately afterwards the iris was pushed forward, the vitreous advanced and a moment later there was a spout of blood. The bleeding went on steadily in spite of cold applications of ice, for thirty hours. The amount of blood lost must have been considerable. There was great pain in the eye, exophthalmus, great swelling of the lids, which were tense and livid. The hemorrhage was followed by suppurative panophthalmitis and orbital cellulitis, for the relief of which I used poultices and free incisions. It eventually subsided, but the old man would not allow the stump to be removed. He afterwards suffered great pain in this eye, but persisted in his determination, consequently he had sympathetic inflammation of the other eye and finally died, worn out by pain, want of rest, and nourishment, for during the attacks of pain, persistent reflex vomiting was present. This adds one more to the already considerable list of cases of hemorrhage after extraction of cataract.

It was also my fate to have a patient who had been blind for several years, who came of a family in which there was insanity. The night after the operation he became acutely insane, tore off his bandages and brandishing a large revolver, which he was in the habit of carrying, made things lively in the ward. He was mastered, put under chloral and recovered his reason. Strange to relate he made a satisfactory recovery and had a good useful eye.

Extreme age does not contra-indicate a successful result. I have operated on a woman aged 93 years with success. Also upon eight patients between 80 and 90, all of whom did well. I performed a successful operation on a woman aged 61, who had been paraplegic for years.

I have not found that either diabetes or albuminuria materially increases the danger of the operation.

With regard to the operation, I formerly performed the strict Morefields operation, iridectomy and incision in the corneo-scleral junction, but I have latterly done the operation without iridectomy in certain selected cases. Where the lens is "drippy," the patient irritable and hard to control, I prefer an iridectomy. I always use eserine sulphate (gr.  $\frac{1}{8}$  ad  $\frac{1}{2}$  i.) for three or four days after the operation. I seldom have iritis. Eserine has been accused of producing iritis, partly I think, *because the solution used is too strong*. The advantage of having a contracted iris is very great until the wound is closed, when atropine may be used if thought necessary. In many cases I wash out the anterior chamber using Panas syringe and a 2% solution of boric acid. I think that there is much less irritation and fewer cases of iritis when any detritus is thus washed out. I have never seen any harm done by its use but I would deprecate a routine washing out of the chamber. With regard to the bandage, I use a knitted one, as light and elastic, something like Liebreich's. I examine the eye every day, do not keep both eyes closed more than a day, and give the patient a shade at the end of a week. I do not think it wise to confine the patient to bed nor to keep him in a dark room. On the other hand, too little protection to the eye is in my experience attended by mild iritis on the seventh or eight day, which is avoided by exercising more care at the outset.

## A CASE OF CONJUNCTIVAL FIBRO-LIPOMA.

Written for the Ophthalmic Record by

M. F. WEYMANN, M.D.

ST. JOSEPH, Mo.

On the sixth of December, 1891, May C., a little girl 6 years old, was brought to me for treatment. Her general appearance gave the impression of health, but inspection of the throat showed some enlargement of the tonsils and a decidedly catarrhal condition of the pharynx. Nose breathing seemed hard, while the nasal discharges consisted of mucus containing large cakes of puss emitting and offensive, though not a very strange, odor. The lymphatic glands in the neck were enlarged; the upper incisor teeth carious to their roots, and on the lower ones there was some loss of enamel on the cutting edge, giving it a serrated appearance. They were not, however, Hutchison teeth in the proper sense of the term. During childhood she had gone through a severe siege of diphtheria; she also had the measles. About a year and a half ago she had been troubled with an eye affection, from which, however, she had completely recovered. The description was very vague, but probably the disease was an attack of parenchymatous keratitis.

She was the youngest of the three children in the family. The second child also was bothered a great deal with "catarrh," no history of syphilis or tuberculosis in the family.

The present complaint was a tumor growing in the right eye, which the parents had not seen before the eye affection mentioned before. Since that time, however, they had noticed it as well as its slow, but regular, increase in dimensions. Accordingly the growth was about  $1\frac{1}{2}$  year old.

The tumor occupied the outer half of the space between the corneal border and the external canthus. Its seat was about over the insertion of rectus externus, with which its long diameter

coincided, although it pointed slightly downward. The general outline of the tumor was elliptical, its long diameter measuring about 7 millimetres. Vertically its greatest dimension was about 4 millimeters, while its thickness did not exceed 3 millimeters. Its color was a reddish yellow, the latter tinge predominating. Over it passed a number of enlarged conjunctival veins which, perhaps, were somewhat congested on account of the irritation accompanying complete closure of the lids. The tumor showed quite a consistency, which changed my opinion as to its propable cystic nature. It caused no pain, was freely movable on the sclerotic, but closely adherent to the conjunctiva. It gave no inconvenience except a moderate interference with the movements of the eye and perfect closure of the lids. The parents wanted it removed, fearing it might grow over the "sight." I made the diagnosis of fatty tumor, but I must confess that it was connected with an interrogation point in my mind. In spite of the abundance and variety of material in Prof. de Wecker's clinic at Paris, I could not remember having seen just such a case. Still, the indication was plain, no matter what might be the nature of the tumor. I, therefore, excised it at once. The little operation caused no trouble whatever. To save as much as possible of the conjunctiva I cut quite close to the tumor. In so doing I observed that the latter membrane, although not entering into the formation of the tumor, was thickened diffusely all along the margins.

Microscopic examination revealed the neoplasm to be a mixed one. The major part of its substance (more than  $\frac{2}{3}$ ) was made up of fibrous tissue. The disposition of the great majority of all the fibrous bands and bundles corresponded evidently with the long axis, for the sections made at right angles to the latter displayed a great many bundles cut in that manner. Maceration in nitric acid for 12 hours showed this arrangement even more plainly, although fibres coursing in different directions were not wanting. Immediately from the conjunctival epithelium and basement membrane, I invariably noticed the starting of strong fibrous bands without any addition of fat. The latter occupied the middle of the growth and especially the part directly in contact with the sclerotic. In the latter situation I counted a



a fat patch of about 2000 cells. The figure was obtained by multiplying the number of cells along two adjacent lines. The place having an irregularly quadrilateral shape, the calculation was in my opinion, fairly correct as an approximative estimate. In the same section (including the whole tumor) there were several other fat centers, but the one mentioned before was the largest of any, not excepting other parts of the tumor. Toward the central part the fat patches diminished in size. Often a group of cells would force the fibres apart in form of a figure accomodating only about a dozen cells. One third of the growth lying along the conjunctiva showed a complete absence of fat.

To get a better understanding of the structure I macerated several sections in dilute nitric acid. The effect was indeed very satisfactory, because the fibrous tissue was brought out nicely.

The reason for the above report is two-fold. Firstly, it will describe a tumor of considerable variety; secondly, it will help to settle the discrepancy of opinion now existing among ophthalmologists on that subject.

Prof. Schweigger, of Berlin, makes no mention of this tumor at all; nor does the great work *Traite d'ophtalmologie* of de Wecker. The latter does speak of lipomata, however. Of them he says, "*elles sont assez rares*" In describing them he refers to Graefe's statements, which he quotes in part. Schmidt-Rimpler also refers to Graefe and merely states that lipomata of the conjunctiva exist. Newleship, in his excellent little hand-book (1899), is the only one of my available authors, who actually mentions the tumor. For, while the others speak of simple lipomata, he remarks that fibro-lipomata of the conjunctiva may occur and that they are usually congenital.

As far as their congenital nature is concerned my case does not confirm it. On the other hand, it does not contradict it, since the tumor might have existed *in semine*, as it were, since the time of birth. We could readily see how another affection might prove the starting point of active growth. De Wecker considers the tumor, genetically, a derivative from the orbital fat, and quotes in support of this opinion the fact that in the case of his observations there were hand-like processes passing from the tumor backward toward the equator of the eye. In



my case I noticed no such prolongations. Graefe also describes these tumors as distinctly lobulated, like fatty tumors in other regions. I could make out no lobulation. Of course, we must bear in mind that the tumor of the author is a lipoma pure and simple, while mine was a fibro-lipoma. Still, from a general comparison, it seems to me that perhaps with close microscopic examinations many of these tumors would show themselves to be mixed, although I do not mean to say that a pure lipoma is impossible. At all events, the text books will have to insert, as separate conjunctival tumors, fibro-lipomata.

While the points given in the clinical history may have no relation to the tumor or its etiology, I thought it might be well to add them for future comparison.

114 S. 8th Street.

## THE SURGICAL TREATMENT OF GRANULAR LIDS.

Written for the *Ophthalmic Record* by

L. WEBSTER FOX, M. D.,

PHILADELPHIA, PA.

The readers of the *Ophthalmic Record* have no doubt, followed with interest the writings of the ophthalmic surgeons on trachoma, its etiology, prognosis and treatment, which so recently appeared in this journal. Only one writer, Dr. P. D. Keyser, of Philadelphia, spoke of the treatment inaugurated by Prof. Manolescu, of Bucharest. The remarks made were very brief and inasmuch as this mode of treatment is fast growing into favor, especially with our confreres abroad, I take this opportunity of giving a more lengthy review of its *modus operandi* than was given by Dr. Keyser.

While in Paris recently I saw it put to a practical test by Dr. Dorris, clinical chief to Dr. Abadie. I also had the opportunity of examining a number of patients upon whom the operation had been performed with gratifying results. Dr. Dorris also performed the operation in my presence and this afforded me the opportunity of becoming conversant with its technique.

Two instruments have been specially devised for the operation.

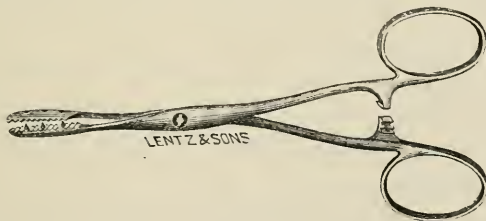


Fig. 1.

Fig. 1. A catch dressing forceps having on the male blade three pins which, when the instrument is closed, pass through corresponding openings in the opposing or female blade; these

points pierce the eye-lid to prevent slipping when complete inversion of the lid is made.



Fig. 2.

Fig. 2. The second instrument is a tri-bladed scarificator or scalpel; the outside blades are jointed so that they may be easily turned when being cleaned. They are securely held in place in a platinum handle, and make parallel incisions.

The details of the operation are as follows: The upper eye-lid is grasped by the forceps, along its margin, then turning the edge upon itself the lid is rolled up until the retro-tassal fold is brought out. The exposed part is now thoroughly scarified with the three bladed scalpel not only horizontally but also vertically. The granular tissue is then scrubbed with a tooth-brush, in which the bristles have been cut down to about one half their usual length. The brush is steeped in a corrosive sublimate solution 1 to 500 just before using. Immediately after the *grattage* the part is washed with the 1 to 500 solution.

Another part of the lid is unrolled and the scarifying, scrubbing and washing repeated, and in like manner the whole of the eye-lid. The lower lid is then similarly treated and if necessary the operation is extended to the other eye. If extensive pannus of the cornea exists peritomy may be performed. In one case under my care pannus existed in its worst form but wishing to test the *grattage* operation alone nothing was done to the bloodvessels over-running the cornea. This case is doing well, later on I shall have more to say about this patient.

It is to be supposed that a great deal of reaction would follow such an operation. The cases, however, which I followed in Paris and my own case, were remarkably free from pain and swelling; but if such exigencies arise, Dr. Dorris informs me that prompt antiphlogistic measures combat such troubles. In twenty-four hours the eye lids are everted and washed with the 1 to 500 corrosive sublimate solution. Some difficulty may be experienced in turning the upper eye-lid, but by gentle pressure and manipulation it can easily be accomplished. This treatment

may be continued for about a week or until desquamation of the granulations ceases. If, after three weeks a few irregular projections remain on the lids they may be touched with solid stick, or five grain solution, of arg. nit. The success of the operation depends upon complete evisceration of the trachoma. If any granulations remain behind they will again spread over the under surface of the eye-lids.

The *grattage* operation is a means to an end. Every ophthalmic surgeon who has had an extensive hospital practice has also had many patients suffering with granular lids to prescribe for. In some districts the disease prevails to a larger extent, particularly if the contingent is largely composed of Irish or Polish Jews. But I am also compelled to say that this disease is not limited to habitats of cities but the indians from the plains suffer as well. Quite recently I had under my care Left Hand, Head Chief of the Arraphoes, and Wolf Rope, Chief of the Cheyennes, both suffering from granular lids and pannus of the worst type. The conjunctival surfaces of the eye-lids were as rough as the upper side of a nutmeg grater. There is no doubt, however, that the trouble which exists among the indians is due to their want of cleanliness and spending a great deal of time, especially during the winter months, in their smoky tepees.

The every day treatment is directed towards the reduction and absorption of the granular formations. This is done by caustics, powerful astringents or the actual cautery, all to the same end, that is to get rid of the granulations and render smooth the under surface of the eye-lids. In 1883, I hastened the cure by eversion of the upper lid and excising the granulations with a curved scissors and scraping the parts with a scoup, and followed this operation by cutting through the cartilage from the inner to the outer canthus, in other words I followed the scraping operation by a Burow incision.\* “This relieves the friction of the lid upon the globe by allowing the tissues of the lid to elongate.” I tested a patient within the last month for a change of glasses who had this “scraping with the Burow” performed at the Germantown hospital in 1884. She

\* See Fox & Gould Diseases of the Eye, Second Ed. page 85.

at that time had complete pannus and granular lids and not able to count fingers at any distance.

I have not at hand any article written on the Manolescu operation, but if the usual cicatricial contraction of the cartilage of the eye-lid takes place after the conjunctiva has become denuded, then, to prevent contraction of this cartilage with its sequelæ—entropion, trichiasis or distichiasis—follow the *grattage* with a Burow, which is simple to perform and perfectly safe. I must repeat what I have often heard Mr. Couper, of Moorfields Eye Hospital, say: "If there ever was a man who deserved a monument for devising an operation in ophthalmic surgery, it was Burow."

The patient upon whom I performed the "modified grattage" operation mentioned in the earlier part of my paper is a young Italian girl (15 years of age). She had been under careful treatment for granular lids (right eye only affected) at one of our city hospitals for nearly a year, and she has also been under my care for about the same length of time, and had not obtained any better result. The case would improve for a time, whenever a new line of treatment was inaugurated, but soon the patient would relapse and be as bad as ever. I should have felt complimented had the patient sought professional services elsewhere; but she, having exhausted the patience and skill of so many ophthalmologists, would not make the change.

Upon my return home from Paris, I performed the modified operation as described above with exceedingly gratifying results. She is now able to count fingers at arms length; the thickened upper eye-lid is assuming a more normal appearance, and can be elevated as rapidly as its fellow; the roughened granulations have disappeared and the cornea clearing up, while the color of the iris is growing visible. My earlier experience convinces me that Burow's operation is a valuable addendum to that now known as the *grattage*. Since the above article was written, Dr. W. B. Marple, of New York, has published in the *Medical Record*, Nov. 28, 1891, the best description of the *grattage operation* that has so far appeared in english. He also quotes the experience of Dr. John E. Weeks and Dr. Gruening, of New York.

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## AGGRESSIVENESS IN JOURNALISM.

It has already been charged against the Editor of the Record that he is too aggressive; that that kind of Journalism will not take, etc. In reply to this charge I wish to say that I have no enemies to punish nor friends to praise in a journalistic way. If in combatting error, as I see it, the name of some writer or thinker is a little conspicuous I am not to blame, he placed it there himself. My fight is not against the man but against the doctrine he may have taught.

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## A LITTLE LATE.

This double issue of the Record should have been out Jan. 1, but there have been some unavoidable delays in the mechanical department. As will be seen this issue is Nos. 7 and 8 (Jan. and Feb. 1892.) No. 9 will be out on time, possibly before March 1.

It will be the constant aim of the Editor to have the Record well filled and to get it out on time.

## TOO STRONG.

In No. 6 of the Record at top of page 183, Dr. Pooley was made to say "The wound was irrigated with a solution of bicloride 1 to 500" etc. The strength which he used, and which he intended writing, was "1 to 5,000".

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SYRUP OF TRIFOLIUM COMPOUND  
AS A VEHICLE FOR THE ADMINISTRATION OF  
IODIDE OF POTASSIUM.

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There are few doctors who have not had cases requiring the administration of iodide of potassium to whom the drug could not be given in the necessary dose, or for the length of time required, because of irritability of the stomach. Water, the common vehicle, is all that is necessary in most cases; fresh sweet-milk is better. In all cases the best vehicle is the Syrup of Trifolium Compound. The writer is indebted to Dr. Stephen Dodge, of Halifax, Nova Scotia, for the information which has led him to adopt this syrup as a vehicle for the iodide of potassium.

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ANNALS OF OPHTHALMOLOGY AND OTOTOLOGY.

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Vol. 1 No. 1 of the above named journal has been recieved. It is a welcome addition to the Record's list of exchanges. It is edited by Jas. M. Parker, M.D., Kansas City, Mo., and is published by the Kansas City Poly-Clinic Post-Graduate Medical School. It will be issued quarterly, each number containing about eighty pages. This first number contains several short and interesting papers by some of the most prominent men engaged in the work of Ophthalmology and Otology. In the prospectus we learn that Rhynologists and Laryngologists will be given space for the publication of practical papers.

The Record, only six months older than the Annals, extends to it most hearty greetings, and wishes it the fullest prosperity. The subscription price is \$2.00 a year.

In this connection it may be said that the number of journals devoted to Ophthalmology and Otology is not so large, but that every man engaged in these special lines of work can afford to take all of them, and, in fact, he can not well afford not to take them all. Each contains matter that will not be found in either of the others. The Record recommends that its readers take, in connection with it, the following special journals: Archives of Ophthalmology, Ophthalmic Review, American Journal of Ophthalmology, Archives of Otology, and Annals of Ophthalmology and Otology. No man can read these journals and the Record a year without feeling himself stronger, and being the better prepared for his practical work.

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## TREATISE ON DISEASES OF THE EAR

By ST. JOHN ROOSA, M.D.

PUBLISHERS: WM. WOOD & CO., NEW YORK.

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The copy of the above named work now before me is marked "The Seventh Edition." This fact alone indicates that the book must be one of worth. A perusal of its pages shows that the author carefully revised the sixth edition before bringing this one out. It is a very readable and instructive book. The history of the progress of otology given in the first 39 pages is exceedingly interesting.

In the body of the work the author has pursued the only proper course in that he studies first of all the anatomy and physiology of a part before treating of its diseases. I consider the book a safe guide in the diagnosis and treatment of aural diseases.

The author speaks very disparagingly of the "Valsalvian experiment", teaching that it rarely does good and may do harm. If he means to condemn the deep filling of the lungs and the prolonged, forcible blowing of the air through the Eusta-

chian tube into the drum cavity, while the mouth and nostrils are closed, then I agree with him. Any other known method of inflation would be better than this. But of all methods known and practiced the best, in my judgment, is the modified Valsalva experiment, the modification consisting in gentle and spasmodic, instead of forcible and prolonged, inflation.

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### THE VOLUME OF PROCEEDINGS OF THE SECTION OF OPHTHALMOLOGY OF A. M. A.

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It was a wise move on the part of the management of the *Journal* to bring out in separate volumes the proceedings of the Sections of the A. M. A. In the volume of proceedings of the Section of Ophthalmology there are errors that will not be repeated in subsequent issues. These errors occur in the discussions which followed the reading of the papers. Some of these are ugly and are calculated to slightly irritate the authors of the discussion. On the whole the volume is a very creditable one, and the Section justly feels proud of it. In subsequent meetings those participating in the discussions of the papers will most likely write out what they may have said on the floor. When this has been done the publisher should take the pains to send to each man a proof for his correction. Only in this way can perfect accuracy be attained.

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### NEW AMSTERDAM EYE AND EAR HOSPITAL.

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The last report of this charitable institution has just been received with the compliments of its Executive Surgeon, Dr. Thomas R. Pooley, of N. Y. A comparison of this report with the one preceding it shows that the institution is on an up-grade. With Dr. Pooley at its head it is destined to still advance as the years go by.

In glancing over the classification of the diseases, some troubles seem to be very uncommon in N. Y., as compared with the same conditions in this part of the country. Pterygium is a very common condition in at least some of the southern states. There seems to have been but one case at "The New Amsterdam" during the twelve months. Trachoma must also be less frequently seen in N. Y., than in Nashville. The same may be said of the conditions resulting from Trachoma, such as entropion and pannus.

Reports of the Eye and Ear Hospitals in large cities are always interesting, and can be had by application, through the mail, to the hospital management.

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#### PHYSICIANS VISITING LIST.

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A physician, whether engaged in general or special practice, should have in his pocket a blank book for recording charges, and for noting any thought that may occur to him when absent from his desk. Of the various books of this class there are none superior to that published by P. Blakiston, Son & Co., Philadelphia. The printed matter in this little book is valuable as a ready reference.



## Department of Otology, Laryngology and Rhinology.

GEO. H. PRICE, M. D., EDITOR, 701½ Church Street,  
NASHVILLE, TENN.

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### ABNORMAL LIVING ENTOZOA IN THE HUMAN EAR.

Written for the Ophthalmic Record by

WALTER B. JOHNSON, M. D.,

Surgeon to the Paterson Eye and Ear Infirmary,

PATERSON, N. J.,

A patient, having an old suppurative Otitis Media in the left ear which had not been under observation for some time, applied for treatment at the Infirmary, in consequence of an increased discharge and some peculiar sensations about the middle ear.

He described his symptoms as a feeling of throbbing, and on closer questioning, he complained that the sensation was that of constant movement and running of matter from the ear, entirely out of proportion to the actual amount of the discharge; there were noises of various kinds and of large volume almost constantly present.

These symptoms had been aggravated for about one week, being more noticeable at some times than at others, and being decidedly more constant during the last three days.

He had been able to sleep some, but was frequently disturbed by the throbbing or feeling of discharge, tinnitus, and pain when awakening during the night. He only had a moderate amount of pain, although sharp stitches would come, and the

ear was constantly more uncomfortable than it had been previously to the present attack.

The patient was a strong, well-nourished man, in good health; he had no new pharyngeal inflammation and nothing to indicate the presence of an exciting cause for the recurrent Otitis, as up to the time of the onset of the trouble, he had, as the only symptom, a very slight, but offensive discharge.

On examination, a profuse, muco-purulent discharge of considerable thickness, yellow in color, and excessively odorous, was found in the external auditory canal.

The discharge was dried out very carefully, and when all was entirely clear, the thickened, moderately inflamed drum membrane was examined, and a large perforation, involving the lower inferior posterior quadrant of the tympanum was disclosed.

In re-examining the ear shortly after, there appeared in, and about the opening, a white substance, which was thought to be some of the white exfoliated skin so frequently removed from the ears of such patients.

An effort at its removal, resulted in its complete disappearance (although nothing came away on the cotton used in drying the ear), and a decided increase in the discomfort of the patient, who complained of a severe lancinating pain.

The patient was asked to sit quietly for a time with his head resting on the left hand; he complained of very excessive throbbing, buzzing and movement in the ear for the next fifteen minutes. When he was again examined, the white material was again present in the aperture and being excited by the examination was seen to move through the opening and pass entirely out of sight. It was then concluded that some living organism was present in the ear and after an ineffectual effort to remove by syringing, the patient was directed to assume the same position, resting the ear on the hand, as likely to encourage warmth, and assist in again luring it from the cavity of the middle ear.

The movement and sensations as above described continued, and at the end of half an hour the examination was repeated, the speculum was rapidly introduced and followed by a pair of fine rat-tooth ear forceps. The body was in sight and it was

siezed and instantly removed. It held to the mucous membrane with sufficient force to cause some hemorrhage.

On examination this body was considered to be an ordinary maggot, it was of large size fully  $\frac{1}{2}$  inch in length and very fat, it was quite lively.

There was a small red spot in the maggot, which raised the question of the possibility of its having recently eaten some human blood corpuscles, while within the cavity of the middle ear.

My friend Dr. Neil J. Hepburn suggested the advisability of sending the specimen to the Rev. Samuel Lockwood, Ph. D., Secretary of the New Jersey State Microscopical Society, an accomplished Entomologist of Freehold, N. J., who writes:—

“The larva sent was not seen alive by me, but it is in spirits, and its form is well preserved. It is a true dipteran larva, being the grub, or maggot of the flesh fly, or meat-fly, *Sarcophaga carnaria* (Linn). This must not be mistaken for the blue-bottle, or blow fly, *musca vomitoria*, which lays its eggs on flesh, or meat. The *Sarcophaga carnaria* is viviparous. The eggs hatch and live within the oviduct of the female, and these tiny, very white grubs are each about .06 of an inch in length, and are deposited upon meat, which they devour ravenously, growing to the length of  $\frac{1}{2}$  or  $\frac{2}{3}$  of an inch. They then enter the ground, and assume the pupa form. But as the form of the pupa of the fly differs from the pupa of many other insects, the condition at this stage of its life is known as the *puparium*, after this it has but one metamorphosis, when it evolves into the complete and perfect fly.

“I have used the word larva in respect to the specimen. This is not quite systematic, as it has reached a pupal stage; it is in fact a *puparium*, but not quite complete. I should think it is within a day or two of this state. The form of the puparium is figured in my article: ‘A Viviparous Fly,’ in American Naturalist, Vol. vii, 1873, p. 194. My belief is that the specimen when taken from its nidus was about ten days old. I think its peculiar lodging place, the human ear, has lengthened by two or three days the usual time required to reach the stage attained by the specimen. By good fortune you struck the opportune

time for extracting it, as at the time of making the pupal change, the larva is very restless. A day or two later the ability of changing place or position would have been lost and whether it died or evolved into a perfect fly, the condition of your patient would have been pitiable.

“How came this larval insect in the middle ear? We can do little more than conjecture. You say it was seized and extracted from the external canal of the ear, it having returned there by a hole in the tympanic membrane, through which it had before escaped you. It seems to me then that its nidus was the tympanic cavity. If that hole, or rupture was over ten days old, the larva could have entered it from the external canal, the little grub having been deposited there by the parent fly. The carnivorous flies are easily deceived by scent. Sometimes they will deposit their grubs or eggs in an ill-scented flower, mistaking it for tainted meat. In fact upon any malodorous object if it be vegetal or animable. Some ears have an offensive smell. Might not even the diseased tympanum have been attractive?

“Though it may seem strange, I think it more likely that the tiny larva, only the .06 of an inch in length should have found its way from the mouth up the Eustachian tube. I send you two small pamphlets of mine on Abnormal Entozoa in man, reprints from the American Joarnal of Microscopy, Jan. 1881 and May 1881, by which you can see that these parasites have taken possession of the human stomach through the medium of cold boiled cabbage, and meat. Supposing your patient to have eaten cold tainted meat, and when a morsel was in his mouth, to have for some cause coughed, or in some way dislodged a tiny larva of our *Sarcophaga* so that it was thrown upon, or near to, the beginning of the Eustachian tube. To me there is nothing marvellous in the insects travelling up the epithelial walls, somewhat slowly, and feeding on the mucus, until when it had taken possession of the interior of the ear, it attacked and fed upon the pus of the tympanic cavity. The spot of blood mentioned in your letter I think had not much to do with the matter at the time of extracting it, as it seems to me, it had gone so far into the pupa state as to make feeding no longer possible.

The odor of decomposed pus might attract it to ascend the Eustacian tube.

“To make the discussion complete you will have noticed that some questions might be put to your patient with advantage.

“1. Had he been eating suspicious cold meat or cooked vegetables at about seven to ten days previous to the time of the extraction of the larva?

“2. Had he experienced any sensation in the Eustachian tube when it began? when it stopped?

“3. When did the perforation of the tympanum occur?

“4. Was there a malodorous condition of the external ear?”

The questions suggested by Prof. Lockwood were asked, and the answers were such as to point undoubtedly to the parent fly of the species *Sarcophaga carnaria*, having deposited the grub, already born, in the malodorous secretion of the ear, on which it fed until sufficiently developed to become active, when it began its course of constant torment to the patient, by crawling about in the pus, or by being constantly carried out of the cavity of the middle ear by the increasing discharge, and then returning again, giving rise to all the symptoms complained of by the patient.

The extreme activity of the puparium, and its frequent passage from the external auditory canal to the middle ear are very interesting, also the history of the birth, growth and development of the larva, and the suggestion of the probability of the larva having made its way to the middle ear through the Eustachian tube.

The possibility of the puparium passing into the next stage of development, and becoming a winged fly, while it remained in the ear, is very slight, as it would probably have been discharged with the pus, when it entered the stage of rest, or if further development were possible it would have suffocated in the pus and subsequently come away with the discharge either in mass or piece-meal.



## MASTOIDITIS FOLLOWED BY ORBITAL CELLULITIS.

Written for the Ophthalmic Record by

READ JENNINGS McKAY, M.D.,

WILMINGTON, DELAWARE.

June 15th, 1884, I was requested to visit Mrs. R. S. age 44 years, a native of the U. S., who had taken cold three months previously, which had caused a purulent discharge from both ears. She had a similar discharge from both ears in childhood, which had entirely ceased. The left ear had ceased discharging and was well. The right had continued to discharge freely until within a few days past. Perforation of its tympanic membrane was found. She had been ill enough to be confined to her bed for some four or five weeks. Three or four days ago her right eye began to swell, and the swelling has increased daily since. A large mastoid abscess was found upon the right side, the swelling measuring from 5 to 6 inches vertically, and from 3 to 4 inches transversely, which prevented turning her head. There was also great swelling of the right temporal and orbital regions with considerable protusion of the right eye, symptoms indicative of pronounced orbital cellulitis. The right eye was immovably fixed and blind, with a greyish pupillary field and hazy cornea, preventing illumination and ophthalmoscopic examination of its fundus. Her pulse was 120, very weak and irregular, temperature 101.5 F., and she was very pale and anaemic. She had frequent daily rigors followed by perspiration with marked symptoms of impending or actual blood poisoning (septicæmia). Her condition was regarded as very dangerous and a grave prognosis given. The mastoid abscess was promptly opened and discharged from 7 to 8 ounces of pus. An oakum seton was introduced and retained, to promote and

secure free escape of pus. Continuous poulticing was ordered. The chemotic conjunctiva was scarified at my second visit. Two days later, the 17th, the mastoid abscess was greatly reduced and the patient could bend her neck and turn her head somewhat. Her pulse was 120 and temp. 99.6 F., at 2.30 p. m. The orbital swelling and protusion of the eye had greatly increased and was very painful. Regarding her as too weak to bear an anaesthetic, a stimulant was given, and a deep incision, was made through the right upper lid, into the orbit at its upper and inner angle, extending down to its apex, from which bloody serum at once flowed. A solution of atropia and a poultice to the eye were ordered. At 5 a. m. of the 18th she had a chill. At 9.30 a. m. her pulse was 120, temp. 101 $\frac{1}{4}$  F. The abscess of the neck was discharging freely, and the bloody serum exuding from the orbital incision. Took nourishment freely. At 5.30 p. m. pulse 110, temp. 99 $\frac{3}{4}$  F. 19th 2.30 p. m. pulse 120, temp. 99 $\frac{3}{4}$  F. 20th 2.30 p. m. pulse 100, temp. 100 F. Free discharge from mastoid abscess and the orbital wound. Swelling of the eye diminishing. 21st 3 p. m. pulse 100, temp. 99 $\frac{3}{4}$  F. Cornea clearing around its margin and the pupil indistinctly observed. Patient quite comfortable. 25th 3 p. m. pulse 107, temp. 99 $\frac{3}{4}$  F., cornea clear, pupil moderately dilated, pigment spots upon capsule of lens, and a greyish white reflex from the fundus observed with the ophthalmoscope. The vitreous body was opaque.

The patient slowly but steadily improved under the daily care of Dr. Francis L. Springer, who was associated with me in the case.

The seton was removed and the abscess healed. Good hearing of the R. ear was obtained and continues, but not equal to that of the L. ear.

The R. eye became atrophic and the orbital contents became greatly shrunken. In Sept. 1889, a weak myopic cylinder was ordered for distant use of her L. eye. She has continued in good health the past six years.

## PYOKTANIN IN DEEP SECONDARY MASTOIDITIS.

Report of case. Read before the L. A., Ca., Medical Association

Nov. 9, 1891, by

H. BERT ELLIS, B. A., M. D.,

LOS ANGELES, CAL.

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Mr. President and Fellow Members:—

I present this case not on account of its rarity, not that there was any peculiar method of treatment employed, but on account of its history and its peculiar behavior under treatment, believing that from it, and from the discussion this report may bring forth, we may all derive benefit.

For the facts herein presented which occurred prior to my connection with the case, I am indebted to both the husband of the patient, and the physician formerly in charge.

The Patient Mrs. T—— aged 26 years, on about May 1, 1891 was taken with “la grippe” pains over entire body. These under treatment subsided after three or four days, excepting in head where they continued through both ears, finally ceasing in the left, but growing worse in the right.

Soothing drops of a solution of cocaine in tr. of opium (the exact formula of which I do not know) were put in external ear, and they gave temporary relief. But, after a day or two, the trouble grew worse and a lively discharge of blood and thick yellow pus began to run into the nose and throat which was thrown off by blowing nose and coughing. At the same time the right mastoid region became tender to the touch and somewhat swollen.

Peroxide of Hydrogen put in the ear in small quantities failed to give any manifest evidence of pus, and no perforation was visible with imperfect illumination, although the patient heard the peroxide of hydrogen bubble slightly during its presence in the external meatus.

The pain and tenderness continuing, and there being no cessation to the discharge of blood and pus from the nose and throat, the physician in attendance decided an operation was necessary, and on June 15th, under an anæsthetic, a slightly oblique incision two to three inches long was made through the soft tissues to the bone. This incision was posterior to the auricle and one half inch from meatus. No secretion nor even any inflammation of the periosteum was found. The mastoid cells, at a point on a level with the meatus, were then drilled into but not until the mastoid antrum was reached was any diseased condition found, when however that point was arrived at, about two teaspoonfuls of pus flowed out, and the antrum was washed out with peroxide of hydrogen until clean.

The subsequent treatment adopted was to clean once daily, by injecting peroxide of hydrogen into the mastoid opening, by means of an ordinary urethral syringe.

During this treatment the decomposed pus would escape through the eustachian tube into the pharynx, and at the same time the external meatus would fill with bubbles.

Excepting at the time of cleaning, the pain was much reduced, and the temperature dropped to normal or below 98.6, and at first the secretion diminished, and the mastoid incision healed rapidly excepting a small point through which it was only possible to inject the peroxide of hydrogen, by means of a hypodermic needle.

As the mastoid wound healed, the secretion increased, and the length of time required for the daily cleaning was more than correspondingly lengthened, and on July 10th. I first saw the case, being called in consultation by the operator.

I found the external auditory canal filled with a thick tenaceous pus, and the history given was that there had been no discharge from the ear prior to operation, and that treatment had been carried on only through mastoid opening. After carefully syringing the ear with warm water, I found a perforation, the size of a rice kernel in the membrana tympani, close to its junction with the posterior wall. In attempting to evacuate the middle ear, by the Valsavan process, but little pus would escape

on account of the perforation being filled with granulations or polypoid tissue.

When the peroxide of hydrogen was injected through the artificial opening, which was also surrounded by fungoid tissue, for a few seconds there would be considerable pain: then the destroyed pus would commence to escape both through the eustachian tube, and the perforation, and to a slight extent from around the needle. Hearing of the diseased ear at this time was greatly diminished.

I advocated temporizing and against another operation at that time, for the following reasons:—

1. The patient was of slight build, poorly nourished, and her general health was below par.

2. She had, within a year or two, been through several operations, and the anaesthetic had always made her intensely sick for a week or ten days after its administration. And,

3. After the ear operation the treatment had been carried on by the husband,—the physician only occasionally seeing the patient,—and I thought that altogether likely the ear had not as a rule, been thoroughly cleansed.

Subsequent observations revealed the fact that I had, in thought, done the husband great injustice; for to his painstaking care and constant watchfulness, is due to a great extent, the final happy result.

The physician who had called me in consultation agreed with me in regard to the waiting; and requested that I should take full charge of the case.

I made but few changes in treatment. My plan was, to daily cleanse the external meatus with warm water first, following this with peroxide of hydrogen administered by means of a hypodermic syringe, through the pin-point opening into the mastoid cells, till it appeared clear in the external meatus without bubbling. When I was convinced that the ear was free of pus I injected a syringe full—30 drops—of an aqueous solution of pyoktanin,—1 to 300,—through the mastoid incision, and I also, partially filled the external meatus with the same solution, which was absorbed in a few minutes.

My object in using pyoktanin was two-fold. In the first



place, I believe it to be an efficient germicide, without irritating effects, and without giving rise to any symptoms of systemic poisoning: and secondly, by its action on the nuclei of cells in neoplastic growths, it renders them sterile and non-proliferating.

I also injected a few drops of the solution into the fungous growths behind the auricle, and it caused them to disappear entirely in the course of two or three days.

Under this plan of treatment there was less pain and for a season less secretion; but so long a time was occupied in getting the parts thoroughly clean, that the patient was exhausted, and had hardly time to recuperate,—although I had her on a general tonic,—before it was again necessary to go through the cleansing process.

Although the excessive tissue behind the ear disappeared, the polypoid growths of the middle ear increased in size, to such an extent as to protrude from the perforation and prevent the escape of any pus, or even air, into the external meatus, by the Valsalvan method; and on one day they even prevented the peroxide of hydrogen from manifesting itself in the canal. I consequently canterized the protruding polypus with pure nitrate of silver, but it effected no very marked result.

A month of careful treatment did not seem to bring the case any nearer a favorable termination. True the discharge into the pharynx was much less, and not nearly so irritating; the fungosities back of the ear had disappeared and the opening was larger,—large enough to admit a small probe; the patient had no fever, and was able to go out some: but she never was entirely comfortable, pus was still present; and the hearing though some better was still very defective; and on passing the probe into the mastoid cells a distinct roughness could be felt.

What was to be done? There certainly seemed to me to be no alternative, the necrosed bone must be scraped out, and I determined to try the removal, without a general anaesthetic.

On Aug. 14th., the operation was performed. I injected a few drops of a one per cent solution of cocaine—a stronger solution might have been used with advantage—into the skin around the old opening, and after waiting a few minutes an incision an inch

and a half long was made, through the old cicatrix down to the bone, and using a trephine slightly larger than the one used in the former operation, the path to the antrum was enlarged. The antrum was then scraped out as much as we dared, for fear of the facial nerve, but not as much as we wished, for we left it a little rough. We secured, as the result of the scraping, quite an amount of granulation tissue and pulverized necrosed bone. After irrigating thoroughly with hot water the wound was packed with iodoform gauze, which was replaced on the following day by a hard rubbed drainage tube,—an inch and a quarter long by a little over one eighth of an inch in diameter. This was as large a tube as could be introduced, and we had no difficulty in keeping it in place.

For a few days the secretion was profuse but was more readily cleaned out than before the operation, although it took the greater part of an hour before the peroxide would come out clear.

A week or ten days after the operation the husband came to my office shortly after noon asking what in the world was going to be the outcome of the case, remarking that he had that morning commenced cleaning his wife's ear at seven o'clock, that during the cleaning process some blood had appeared and that he did not cease from the undertaking until eleven, and he would not have stopped then had not his peroxide of hydrogen given out; his wife was completely used up and if the pus was going to develop so profusely, it was only a question of time when she would go under.

Believing that the peroxide was a source of irritation I stopped its use forthwith, and ordered that the wound and ear be washed out with hot boiled water till it returned clear, and to follow the water with the pyoktanin in the same manner that it had been used. The result of the change was marked in a few days the secretion almost entirely ceased, the perforation in the drum membrane absolutely closed, but the presence of the drainage tube caused the patient constant annoyance, being at times quite painful; consequently I removed it for one day, but in dressing the wound that morning, instead of using the pyoktanin after washing I dried the parts as carefully as possible.

and blew into the mastoid opening a powder composed of equal parts of aristol and carbonate of zinc. The next morning when I dressed the ear I found the greater portion of the powder as dry as when it was blown in, and on inflating the eustachian tube by the Valsalvan method it was blown out, and the wound was so nearly closed that it would have been impossible to have replaced the drainage tube without making another incision. No pus was detected and the same dressing was repeated. The next day the opening was entirely closed and a week later I tested her hearing, but I could not find that it was a particle diminished, another examination to day still shows hearing undiminished, but she has occasional tinnitus. There has been no pain no tenderness and no discharge since the closure of the mastoid opening.

107 N. Spring St.

## REVIEWS.\*

ADDRESSES, PAPERS AND DISCUSSIONS IN THE SECTION OF  
OTOLOGY AND LARYNGOLOGY AT THE FORTY-SECOND  
ANNUAL MEETING OF THE AMERICAN  
MEDICAL ASSOCIATION,

*At Washington, D. C., May 5-8, 1891.*

This pamphlet containing as above indicated the addresses, papers and discussions in the Otological and Laryngological Section of the American Medical Association, is neat in form and presswork and full of valuable information which should be in the hands of every otologist and laryngologist.

Space will not permit as full a review of each paper as we would like to present, but we hope that each one who may read these remarks will avail himself of this opportunity to secure this most valuable addition to these branches of medical science.

Dr. Jonathan Wright, of N. Y., presented a paper on *Subglottic Neoplasms*, in which he called attention to the fact that neoplasms whether benign or malignant are not as frequent in this country as they are in Europe or else they are given undue prominence in foreign literature. A careful consideration of all the literature leads to the conclusion that the most frequent site of benign growths is on the vocal cords or at the commissure. The etiology depending upon irritation, we should expect to find them in those localities most exposed, hence we should not look for them generally in the subglottic region. A case reported, in addition to complications found in the nares also suffered from a growth in the subglottic region. The growth was discovered attached to the left side of the cricoid cartilage and tracheal rings and to the other side and below the edge of the right vocal cord. The patient was placed in the Hospital and put on the potassium iodide treatment. A tracheotomy was done later

\* Reprints can be obtained by application to authors of papers.

on account of severe dyspnoea. Several days later an operation was made, a portion of the growth removed and examined. To the eye it resembled a papilloma. The growth was removed and the upper part of trachea and larynx packed with iodoform gauze, the tracheotomy tube being left in the lower angle of the wound. The gauze was removed in a few days and later the tube, the wound closing without any bad symptoms. Her voice did not return. There was a reappearance of the growth. She no longer being in hospital disappeared from view. Based upon this case the writer dilates upon the points of importance some of which are often lost sight of in such cases. He calls attention to the fact that while intrinsic laryngeal tumors and extrinsic tumors in this region may cause severe attacks of spasmodic dyspnoea, while the intratracheal tumors seldom cause such symptoms until the stenosis is most marked. He discusses the question of the pathology and comes to the conclusion that this growth is either a "Lymphoma papillare" according to Virchow, or perhaps a papillary lymphoid hypertrophy.

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EXCISION OF THE MEMBRANA TYMPANI, THE MALLEUS AND  
INCUS, AS A MEANS OF TREATMENT IN OTITIS-MEDIA  
CATARRHALIS CHRONICA, AND IN OTITIS MEDIA  
PURULENTA CHRONICA.

Dr. Charles H. Burnett, of Philadelphia, read a paper which he termed a report of progress on this subject.

After stating clearly the indication for this operation, he gives the *rationale* of the operation, in chronic catarrh of the middle ear, as "the improvement of hearing by obtaining a permanent perforation of the membrana tympani, and by a removal of the malleus and incus, to unload the stapes and thus relieve the tinnitus and vertigo so often found in this disease usually mis-called Meniere's disease, and incorrectly referred to nervous disorders in the labyrinth."

"In otitis media purulenta chronica, by exsection of necrotic tissue, drainage is improved, and more direct medication being applicable, the suppuration in the tympanum is checked." The operation is always performed with patient thoroughly



etherized to insure absolute stillness, and the best illumination possible is sought, Dr. Burnett using an electric head-lamp. He calls special attention to the features which characterize the operations in the two diseases, as they are quite different and must be appreciated before undertaking to operate. Dr. Burnett prepares his patients for the operation, putting in good conditions and requiring them to "live moderately for some days preceding the operation." The operation for the purulent form of otitis media, is more promising and the results are more noticeable from the first.

Not only is the suppuration checked but the sequelae of this condition are warded off and the deafness in many instances is most remarkably improved.

The conclusions drawn from the results of the operation in both classes of cases are in themselves enough to command the consideration of all investigators.

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DR. WALTER B. JOHNSON, PATTERSON, N. J.

## INTUBATION OF THE LARYNX WITH REPORT OF EIGHTEEN CASES.

*Read before the Medical Society of New Jersey, 1891.*

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Beginning with the earliest history of recorded efforts to relieve patients suffering from pseudo-membranes in the larynx, the writer follows the various steps until the final perfection of the method of intubation by Dr. Joseph O'Dwyer, of New York. This history is both interesting and instructive, showing how near to and yet how far off previous investigators have been to the solution of this important addition to medical science. The indications for the operation of intubation are dwelt upon at some length and show to those less familiar with this method, the necessity of a thorough knowledge of the various factors entering into consideration before attempting to perform the operation. The symptoms of stenosis as laid down by the writer are concise and if carefully considered will enable the operator to act advisedly. Stress is laid upon the fact that complications

are present when the dyspnoea returns and demands the immediate attention of the operator. If the tube is coughed out the oedema is lessened, and the tube may remain out until the symptoms call for reintroduction. A rasping cough with sudden closure of the tube on expiration indicates that preparation should be made to remove as occlusion may occur at any moment. The advantages of this method over tracheotomy as set forth are numerous and convincing and when fully appreciated will cause thoughtful men to consider the points in favor of intubation before resorting to a more serious and many times less promising operation. A full set of cuts, illustrating the O'Dwyer tubes with all the necessary appliances for introducing and removing are given and the features of each part are impressed upon the mind of the reader, thus enabling one to discover defects or faults in construction.

Touching the introduction of the tubes, the writer has taken much pains to call attention to points of detail in manipulating, so as to place in the hands of each practitioner a guide to successful use of these valuable instruments. He has also spoken at some length of the size and character of tube to be used in certain cases, giving the points to be watched in each case. The removal of the tubes has received the same careful consideration at his hands as their introduction.

Accidents to be encountered in this operation are classified as avoidable and unavoidable, thus placing the operator upon his guard from the first. These points are of special importance and if fully appreciated may prevent much embarrassment to the operator. Dangers attend this operation, as they do all operations of any moment, hence the writer has warned the inexperienced and shown him those he may expect to meet, while at the same time he has shown how many may be avoided.

Treatment, feeding and dieting are given according to the latest and most satisfactory methods.

Prognosis improves as the technique of the operation is more fully understood and practiced, but of course is always dependent upon conditions as set forth.

This paper will commend the operation to all who read it.

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CORRECTION OF HETEROPHORIA.

By GEO. H. PRICE, B.E., M.S., M.D.,

Assistant to Chair of Ophthalmology, Medical Department  
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In presenting this paper, I do so fully appreciating the fact that there has been much of value written upon this subject, while at the same time I am persuaded that much of what has been said deals more especially with the condition *per se*, rather than with the detail of the methods employed for its relief. I came to this conclusion from two facts, which have presented themselves to me in listening to the discussions of this subject at the meetings of the various Ophthalmological Sections which I have attended, and the questions often asked and points raised while in private conversation with some of those who have heard these discussions.

As to the first cause, I will state that the tendency of discussion generally has been as to whether there should be a correction or not, and when this is considered necessary, as to how much should be given, while but little concerning the detail has been touched upon. Again some who in private conversation talked of the methods employed, seemed to be laboring under a

misconception of the question. I will state in the outset, that it is not my intention to deal with the history of this subject, but rather with the question itself.

There is a prevailing opinion amongst men of rank in this department of work, that it is only necessary to mention that such and such should be done, while they leave the question of plans or methods of doing the work to those of less experience, and if failure follows their efforts they then remark, your technique is faulty. These are considerations which have led me to present some of the methods of correcting this often present and very annoying condition, and I trust I may be able to make the matter plain.

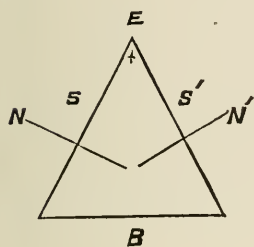
In order to fully understand the nature of the principles upon which the application of correcting measures are based, it will be well to give in a very brief way some of the fundamental facts concerning light, since all our measures are directed to utilizing and controlling this mode of motion. Light results from an infinitely rapid vibratory motion of the molecules of the luminous body, and is propagated in the luminiferous ether in concentric circles or waves, while the vibrations are at right angles to the direction of the wave, that is the vibrations are transverse to the direction of the wave, hence are called transversal vibrations. This motion being transmitted to the retina produces vision.

A ray of light is the direction of the line in which light travels and is always a right or straight line, so long as the medium through which it is passing is homogeneous.

The interposition of any medium which retards or accelerates the motion of light, will cause a change in the direction of the ray, that is it refracts it, provided the ray of light falls other than perpendicularly upon the surface of the medium interposed. Light in passing from a rare to a dense medium is bent or refracted toward the perpendicular, while in passing from a dense to a rare medium it is bent or refracted away from the perpendicular. These facts and laws are sufficient for our purpose in this paper.

The simplest form of a refracting medium with which we deal in ophthalmology is the prism, a triangular piece of glass, hav-

ing a base, two refracting surfaces, an apex or edge and refracting angle, as shown in the following diagram.



B. the base.

S. and S', refracting surfaces.

E. the edge.

N. and N'. normals or perpendiculars to the refracting surfaces.

+ refracting angle.

Fig. 1.

Remembering that whenever a ray of light passes from a rarer to a denser medium its course or direction is changed, that is, refracted; farther, that this refraction always bears a certain relation to the normal, or line perpendicular to the surface of the new medium at the point of incidence, we are ready to study the path of a ray when it is caused to pass through a prism.

In fig. 2 we have a ray of light from the candle, passing through the atmosphere, a rare medium, falling upon the prism, which is of glass, a denser medium than the atmosphere. It will be observed that the ray does not fall perpendicularly upon the refracting surface of the prism, therefore according to the laws previously announced, the path of the ray through the prism will be changed, bent or refracted at its point of entrance, and further we note that the ray is bent or refracted toward the normal at the point of incidence.

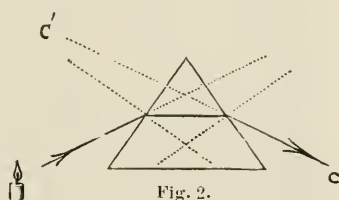


Fig. 2.

The ray now travels in a right or straight line in the new and denser medium, but when it begins to emerge or pass from the denser medium, glass, to the rarer medium, atmosphere, it again sustains a change, bending or refraction, and this time this redirection or refraction is from the normal. Thus we have the ray refracted twice or a double refraction of a ray when passed through a glass prism as indicated in the diagram above.



The eye at C looking through the prism sees the light, but instead of the candle being seen at D it seems to be at a point C' much above its original position. In addition to the fact that a prism changes the direction of a ray of light, it also has the property of dispersing or breaking the light up into its primary colors which results in the formation of a small rainbow. In prisms of low degree this is not pronounced and hence may be disregarded. Then, too, the material of which the prism is made is an important factor, and must be remembered by the manufacturer, for flint glass having a high refractive power should be avoided for clinical purposes.

Understanding the action of a prism we may now pass to the consideration of the action of a lens. A lens primarily is a combination of prisms with their refracting surfaces heretofore plane, ground into curved lines.

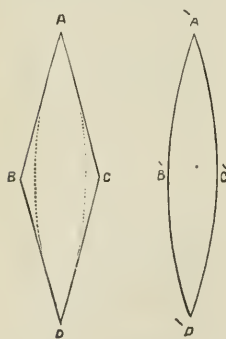


Fig. 3.

In fig. 3., we have a section of a double prism, or two prisms with their bases together. If now the refracting surfaces of these two prisms be ground into curved surfaces, as indicated by the dotted lines, you will have converted the section of the double prism A B C D into a section of a bi-convex lens A' B' C' D'.

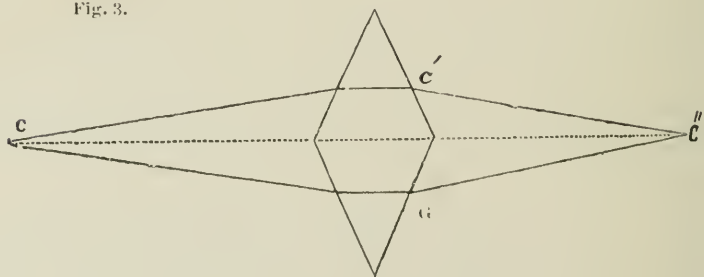


Fig. 4.

Again in fig. 4, we have a double prism so placed that each half receives a ray of light from a source of light at C. When the ray which falls on the upper half is refracted at its incidence

and emergence it passes from the prism in the direction of the line  $C' C''$ , also the ray which falls upon the lower half of the prism will sustain this double refraction, after which it passes along the line  $G C''$ , therefore these refracted rays will intersect at the point  $C''$ . It will be remembered that each one of these prisms disperses the light, therefore each would tend to form a small rainbow, hence at their intersection there would be a confusion. In order to overcome this dispersive power of the prism, we must have each half of the prism made up of a number of truncated prisms so that each component part, or primary color, of the original ray will bear the same relation to the whole ray after refraction as before.

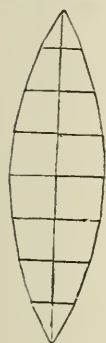


Fig 5.

In fig. 5, we have such a double prism, each half being made up of several truncated prisms. It will be understood at a glance that this prism would fail to produce the desired result, but if the number of component truncated prisms was increased, we would finally reach a point where the desired end is attained, and this would be, when we had an infinite number of component parts. An infinite number of truncated prisms would necessitate a surface line changing its direction at every point, hence a curved line, therefore you would have converted your double prism into a biconvex lens. From this it will be seen that a biconvex lens has the same effect upon rays of light as a double prism, where the bases of the primary prisms are in opposition. If now we reverse the primary prisms in the double prism and turn their edges or apices together, we would reverse the effect produced upon the rays passing through the halves of the prism, as shown in fig. 6, that is, the rays being refracted toward the bases of the primary prisms would be diverging rays.

In order to overcome the dispersive effect of the prisms we would pass them through the same process as in the previous case, reducing their surfaces to curved lines, thus converting this class of double prism into a biconcave lens.

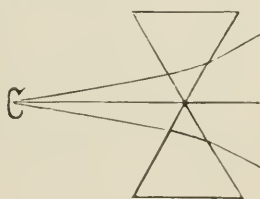


Fig. 6.

The convex cylindrical and concave cylindrical lenses are evolved in the same manner, see fig. 7.

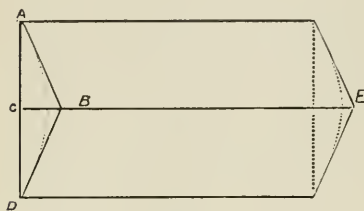


Fig. 7.

In this diagram, if the plane refracting surfaces  $BA$  and  $BD$  be converted into curved surfaces, then you would have a convex cylinder instead of a prism, as indicated by the dotted curved lines.

The reverse of this prism would result in the concave cylinder. Remembering these facts, we are in possession of the necessary information to begin the application of the action of prisms and lenses to the correction of those defects in the muscular balance of the eye, known as insufficiencies of the ocular muscles, heterophoria or faulty tendencies.

To Dr. G. T. Stevens, of New York are we indebted for the classic nomenclature, which has taken the place of that previously used in describing these conditions, it is as follows:

*Orthophoria*. Tendency of visual lines to parallelism, or muscular balance.

*Heterophoria*. Tendency of visual lines away from parallelism, or muscular unbalance.

*Heterophoria is divided into*

*Esophoria*. Tendency of visual lines inward.

*Exophoria*. Tendency of visual lines outward.

*Hyperphoria*. Tendency of right or left visual line above or below that of the opposite side.

Complicated conditions are expressed by compound terms, to wit:

*Hyper-Esophoria*. Tending of visual line upward and inward.

*Hyper-Exophoria*. Tending of visual line upward and outward.

In addition to the above terms, Dr. Savage, of Nashville, Tenn., has used in his own record of cases the term,

*Cataphoria* Tendency of the visual line in right or left eye downward.

This term, though it has not been introduced and used by Ophthalmologists generally, is one of value in recording muscular conditions and deserves a place in the record book of each worker. Again the same investigator gave in the Ophthalmic Record, Vol. 1, No. 1, July, '91, an extensive article on "The harmonious symmetrical action of the oblique muscles in all cases of oblique astigmatism," in which he demonstrated that there was a tendency of the eye to rotate on the antero-posterior diameter or axis, to this condition or tendency, I propose to give the name of,

*Cyclophoria*. Tendency of eye to rotate on its antero-posterior diameter or axis.

These terms must not be confounded with those actual turnings of the eye which constitute the ordinary condition of strabismus; to these have been given the name *Heterotropia*.

In the case of *heterotropia* the condition is manifest at once, while in *heterophoria* it is only manifested by the application of various tests for this condition. In *heterotropia* there is always double vision, *diplopia*, whether observed or unobserved by the patient, while in *heterophoria* there being only a tendency to this deviation the patient is able to maintain binocular single vision, but often times at the expense of much nerve force, which strain induces various reflex nervous symptoms which I class under the general head of *Heterophoralgia*. As to the tests for the determination of these conditions, I shall refer you to an article by Dr. G. T. Stevens, in the Ophthalmic Record of Jany. '92, and also one by Dr. Savage, in the same number of this Journal.

We now come to the question of correcting these unbalanced conditions or *heterophorias*. At present there are three methods of accomplishing this, each of which has its supporters. Briefly stated, they are, by the use of prisms, the decentering of lenses or a combination of these two, and by operations. As to the first, the use of prisms, many have resorted to this plan for some time, using the prisms mainly however, as a means of systematic exercise for the faulty muscles, hoping thereby to train them up to such a point as to render them capable of doing the work required of them. This has met with the hearty approval of

some, while the results obtained by others have not been so encouraging. Again the use of prisms for constant wear has been resorted to by some with variable results. The decentering of lenses, so far as I am able to learn, has not received so much attention from Ophthalmologists generally, but in the hands of those who have resorted to this method, when possible, it has given complete satisfaction, when the proper precautions have been observed, while in hands of others it has proven of little value.

Operations have been more or less popular with some workers, and as in the cases of prisms and decentered lenses, the results have been variable. This may be termed the radical method of accomplishing the desired end, and in a certain number of cases is demanded and must be resorted to before the patient will experience the relief sought. Before resorting to this radical method, it is important to watch the patient if there is any doubt as to the features of the case.

I shall not discuss the question of operative measures for correcting heterophoria, since the object of this paper is to call attention to those cases which fall short of the operative line, yet require help for the relief of their condition. In order to begin a practical application of the foregoing, we will take a patient, such as may come to your office at any time, and apply the laws laid down to his case.

Mr. A. age 20.

R. V.  $\frac{20}{\infty}$  w + 1.00. | L. V.  $\frac{20}{\infty}$  w + 1.50.

R. Esophoria 3°. | L. Esophoria 3°.

Pupillary Dist. 2 $\frac{3}{8}$ ". Saddle Bridge 1" x  $\frac{1}{4}$ " in plane.

Patient complains of headache and tired feeling about eyes after reading, also eyes feel rough in morning.

It is plain that the error of refraction should be corrected, and also that he should be relieved of the strain due to his heterophoria. The first thing which presents itself for the correction of the heterophoria is the prism and its strength, is the important factor. In this case the actual esophoria in both eyes is only 3°, and experience has shown that it is not expedient to correct more than about one half of this actual esophoria, therefore you might use a prism of 1 $\frac{1}{2}$ ° base out over one eye, or



prisms of  $\frac{3}{4}^{\circ}$  over each eye, their bases being out. This may give the patient entire satisfaction for a time or the result may be permanent. It may be expected that at first, the correction of the ametropia and heterophoria, will cause some slight disturbance but this should disappear in a few days, if however the patient returns in a week or two, complaining, a test of his muscles will be in order. He may show a balanced condition or esophoria, or slight exophoria. If no deviation is found it is safe to say that he has had what might be termed a paroxysm of muscular tension from over-work. If esophoria is found it may be necessary to increase the prismatic effect, but this should not be done until this condition is fully established by another examination.

If exophoria in slight amount is found, have the patient call again before making any change, and if again manifested you may reduce the amount of correction by reversing one of the prisms, turning its base in, or by inserting a lens not ground on a prism. At a subsequent examination you may find a balance of muscles and patient entirely comfortable.

Exophoria is just the reverse condition of esophoria, and accordingly calls for the reverse application of the prisms in order to correct the manifest defect.

A case to illustrate this condition is in order.

Mr. B., age 25.

Patient complains of those symptoms which cause us to suspect eye strain and under a mydriatic he shows the following, to wit:

R. V. =  $\frac{20}{\infty}$  w + 1.25  $\ominus$  + .25 cyl. ax.  $75^{\circ}$ .

L. V. =  $\frac{20}{\infty}$  w + 1.00  $\ominus$  + .75 cyl. ax.  $105^{\circ}$ .

P. D.  $2\frac{3}{8}$ " , Sad. Br.,  $1'' \times \frac{1}{4}''$  back  $\frac{1}{16}''$ .

R. Exophoria  $2^{\circ}$ . | L. Exophoria  $2^{\circ}$ .

Here we have the visual axes deviating from the parallel lines in a divergent direction, causing by the tests a crossed diplopia or exophoria.

To correct this we must interpose a prism of such strength as will cause parallelism in the visual axes, or a convergence at the same point, both for near and distant vision. We must remember that the defect is increased as the patient converges for

near vision, hence we must give a fuller correction than we did in esophoria. In the above case we have  $2^\circ$  exophoria in each eye or actual  $2^\circ$  of exophoria, therefore we can correct, according to the symptoms in the case, from one-half to three-quarters and even in some cases the total amount of deviation.

Here then we would order a prism of  $1\frac{1}{2}^\circ$  base in, in front of one eye or prisms of  $\frac{3}{4}^\circ$  bases in, in front of each eye, then watching the case as before indicated, be governed by the results as to the final prismatic effect necessary.

Let us now take a case of vertical heterophoria or a case of hyperphoria.

Mr. C., age 30 years.

R. V. =  $\frac{20}{xx}$  w + .75  $\odot$  + .50 cyl. ax.  $90^\circ$ .

L. V. =  $\frac{20}{xx}$  w + .50  $\odot$  + .75 cyl. ax.  $90^\circ$ .

P. D.  $2\frac{5}{8}$ , S. B.  $1'' \times \frac{3}{16}''$  advanced  $\frac{1}{16}''$ .

R. Hyperphoria  $1\frac{1}{2}^\circ$ .

In cases of hyperphoria, that is when the axis of the eye tends upward, the light seen by the hyperphoric eye is lower than that seen in its fellow eye, hence, in order to correct this we must bring the light up to the level of that seen in its fellow eye. As in exophoria, so in these conditions, will the patient accept and even demand nearer a full correction than in esophoria, hence you can correct one half, three quarters, and in some the entire amount of this variation.

In order to elevate the light to the proper level we must use a prism so placed as to accomplish this, or in other words throw the impression of the light on that portion of the retina which corresponds to lights seen in the horizontal plane.

The base of the prism must then be down and its strength  $\frac{3}{4}^\circ$  to  $1^\circ$ .

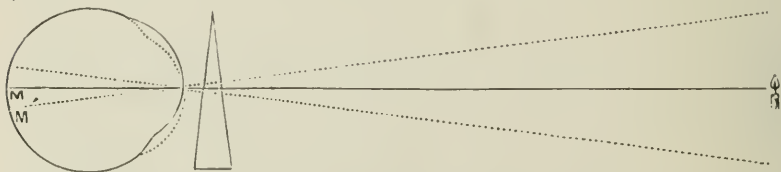


Fig. 8.

Figure 8, shows the condition of hyperphoria, in right eye. In this diagram the cornea of the left eye is dotted and its

macula is at M., while the cornea of the right is the solid black line and its macula at M'. The positions of the cornea and macula show the right eye to be turned up in front and down behind, which places the macula below the horizontal plane, therefore the ray from the candle falls above the macula on that portion of the retina which interprets impressions from below the horizon, hence in this case the light seen in the right eye seems below that seen in the left. To overcome this, a prism is placed in front of the right eye so that the ray of light, after being refracted, is thrown upon the macula in its assumed position. The prism refracts the light and bends it down towards its base and to the macula, which causes a projection of light in the same plane as that of the left eye, since the impressions are now made on corresponding portions of the retinae.

It is common to find not only the esophoria and exophoria, but also the hyperphoria complicating these conditions, thus rendering the question of correcting the compound heterophoria a more complicated question. The following example will illustrate this condition and how we can correct it:

Mr. D., age 25 years.

R. V. =  $\frac{2}{x}$  w + 1.25  $\odot$  + .75 cyl. ax 90°.

L. V. =  $\frac{2}{x}$  w + 1.00  $\odot$  + .50 cyl. ax 90°.

P. D. 2 $\frac{3}{4}$ . S. B,  $\frac{3}{4}$ " x  $\frac{1}{4}$ " in plane.

R. Esophoria 6°		L. Esophoria 6°.
		Hyperphoria 3°.

The actual esophoria being 6°, and a correction of one-fourth to one-half being sufficient in many cases, we can overcome this by the use of a prism of 2° base out in front of the right eye, while to correct the hyperphoria we place a prism of 1 $\frac{1}{2}$ ° to 2° in front of left eye with its base down.

If the esophoria were higher than this, it would require a prism over each eye, which would give us a very complicated glass or lens for the left eye, in fact it would be quite impossible to grind such a lens. This complicated lens can be avoided by using a single prism of such strength and so placed as to affect the light both in the horizontal and vertical direction at the same time. Say we were compelled to correct 2° of esophoria and 2° hyperphoria in this left eye.

Here we could accomplish this by the use of a prism of  $4^\circ$ , so placed that its base would be down and out half way between the vertical and horizontal meridians. The effect of the  $4^\circ$  prism would be divided between the esophoria and hyperphoria and both corrected at the expense of comfort, since so strong a prism is objectionable to many patients.

It will be observed that in the foregoing examples I have made use of cases requiring low degrees of prismatic correction, for the reason that it is advisable to avoid strong prisms for constant use, the dispersive effect of which causes the appearance of colored rings around objects and other annoying complications.

These objectionable features of prismatic glasses may be avoided, yet the same prismatic effect obtained by the proper decentering of the lenses, to which we can now give our attention.

I am quite sure that now and then proper decentering is done in cases when the examiner had no idea of deriving benefit from his oversight, again his oversight may cause the patient increased inconvenience. For instance, in a case of esophoria where the pupillary distance of the patient is greater than the distance between the centers of the lenses, you have a decentering of the lenses inward, which is the same as a prism base in, thus increasing the muscular strain. In exophoria, if the pupillary distance is less than the distance between the centers of the lenses then the lenses are decentered out, which is the same as a prism base out, hence the strain on the muscles is augmented. So also, the malposition of the lenses as to their centers in the vertical axis may cause trouble. When these facts are fully appreciated, more attention will be given to the proper adjustment of the frames of each individual case.

Let us now turn our attention to the next method, that of decentering lenses, for the purpose of overcoming or correcting these faulty conditions.

In figures 4 to 7 and the remarks following it was shown that a lens is only a modified double prism, therefore with these modified prisms we can so change the position of the impression upon the retina as to accomplish the same effect as though the prism were used.

A diagram to illustrate this will show at once our reason for decentering.

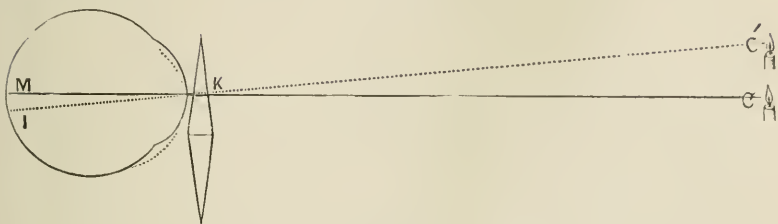


Fig. 9.

In figure 9, we have an eye in front of which, at a distance of 20 ft., is a candle C, taking the light from this source the ray c. m. falls on the macula and the candle is seen in its proper position. Interpose a double prism with its upper half in front of the eye and cause the eye to look again, the candle has seemingly changed its position. Why is this? The ray passing through the prism is refracted toward its base, both on entrance and emergence, hence instead of following the direction k. m. it takes a new direction indicated by k. i. and falls on the retina below the macula. It is a well known fact that, that part of the retina below the horizontal meridian of the eye, records impressions coming from above the horizontal plane in the field, consequently in this case the impression made by the redirection of the ray causes the candle to appear as though it were at C' above its real position. From this we see that the upper half of a double prism elevates the light. Now if our double prism be converted into a biconvex lens, and this placed in front of the eye so that the light is seen through the upper half of the lens, we would have the same effect produced as with the prism, that is, the image will appear higher than the light. Thus you accomplish the same thing with the upper half of a biconvex lens as you do with the upper half of a double prism, but in order to do this you moved the center of the lens down, in other words you have decentered the lens downward.

The concave lens acts in the reverse direction to the convex as was shown in figure 6. The cylinders act as they are convex or concave, but only in a line which is at an angle to their axes, thus a cylinder plays an important part in the question of



decentering, since its strength and position of axis are both to be considered. Thus we see that decentering of lenses accomplishes the same thing practically as the use of prisms, while experience demonstrates that many of the annoying complications of prisms are avoided. This fact alone should commend this method when it can be resorted to. Two kinds of decentering may be used, one the actual decentering of the lens, that is placing the optical center of the lens up, down, in or out from the center of the rim; the other, the removal of the center of lens in any direction by an alteration in the position of the rim, such as increasing or decreasing the distance between the centers of the rims themselves. These methods may be combined if necessary.

An example of decentering may now be given in order to bring out the points made in the foregoing. We take then the following as a common case:

R. V. =  $\frac{20}{X} w + 1.00 \bigcirc + 1.00 \text{ cyl. ax. } 90^\circ$ .

L. V. =  $\frac{20}{X} w + 1.00 \bigcirc + 1.00 \text{ cyl. ax. } 45^\circ$ .

Pupillary Dist.  $2\frac{3}{8}''$  S. B.  $\frac{7}{8}'' \times \frac{1}{4}''$  in plane.

R. Esophoria  $6^\circ$ . | L. Esophoria  $6^\circ$ .

Hypephoria  $2^\circ$ .

From the above it will be seen that the actual esophoria in both eyes is  $6^\circ$ , and from experience we would correct from  $3^\circ$  to  $4^\circ$  of this amount, giving  $1\frac{1}{2}^\circ$  to  $2^\circ$  prismatic effect in each eye. It will be observed in the above formular that the right lens is 2 D. in the horizontal plane, therefore we would decenter here as though we had a spherical of 2 D. while in the perpendicular it is only 1 D. hence we would decenter in the vertical as though we had a sphere of 1 D. The decentering of a 2 D.  $\frac{1}{4}''$  to  $\frac{5}{16}''$  (of inch) gives about  $2^\circ$  prismatic effect here, then we decenter the right  $\frac{1}{4}''$  out, which is same as  $2^\circ$  prism base out.

In correcting the hyperphoria in this eye we must decenter the 1 D, and this decentering must be in that direction which will throw the base of prism down, or will cause the eye to look through the upper half of the lens, consequently the decentering must be down.

Say we will correct one half of the hyperphoria, then we would decenter the right down  $\frac{1}{4}''$  (inch) which in a 1 D. gives

about  $1^\circ$  of prismatic effect. The instructions for this decentering would then be decenter right out  $\frac{1}{4}''$  and down  $\frac{1}{4}''$ , which accomplishes the same as two prisms, one base out the other base down.

In the left we have a different condition of things, here the cylinder is at  $45^\circ$ , half way between the vertical and horizontal axes of the lens. The cylinder being at  $45^\circ$ , bears the same relation to each axis, and as in the case of a prism similarly placed its prismatic effect is to be divided equally between the two, therefore in decentering we must remember to give to the sphere, one half the effect of a cylinder of 1 D., when decentered.

Now, if we decenter the left lens out to correct a portion of the esophoria, it will receive an amount of help from the cylinder proportionate to its relation to the vertical axis, and if decentered up or down, its relation to the horizontal must be considered. Remembering these points, I decenter the left lens out  $\frac{1}{4}''$  which gives me the decentering of a  $1\frac{1}{2}$  D., or about  $1\frac{1}{2}^\circ$  prismatic effect. The formula sent to the grinder would be as follows:

R.  $+ 1.00 \text{ } \ominus + 1.00 \text{ cyl. ax. } 90^\circ$ .

L.  $+ 1.00 \text{ } \ominus + 1.00 \text{ cyl. ax. } 45^\circ$ .

P. D.  $2\frac{3}{8}''$  S B.  $\frac{7}{8}'' \times \frac{1}{4}''$  in plane.

Decenter R. out  $\frac{1}{4}''$  and down  $\frac{1}{4}''$ .

Decenter L. out  $\frac{1}{4}''$ .

If at a subsequent examination I find that enough has not been done for the hyperphoria, I can have another lens ground for this left eye, in which I can decenter both in the horizontal and vertical axis. This time I would decenter up to bring the light in the left eye down, remembering at the same time that my cylinder being at  $45^\circ$ , I get one half of its prismatic effect in the decentering.

If the patient should be myopic instead of hypermetropic, the decentering would have to be reversed, since the prismatic effect of the lens is reversed.

Examples might be multiplied for various conditions, but these will serve to illustrate the principle involved, so that those who have not tried the method of decentering will find no trouble in applying it.

There is another point to which attention might be called as it is inseparable from those just considered, it is the absolute importance of taking the pupillary distance of patients. This feature of ordering is often overlooked and in many cases results in a failure of the work done. Dr. Thompson, who developed the saddle bridge, and who has attempted to impress the importance of measuring the parts of the frame accurately has done us a great service, yet many fail to appreciate these points, hence patients suffer as a result.

Another point should be remembered, and that is, in most of those cases requiring a correction for heterophoria which has caused the patient from time to time to suffer with a heterophor-algia, the ordinary eyeglass should be avoided, it being almost impossible to keep the lenses, mounted in this style, in the proper position before the eyes.

It is always well to see the patient at the time he commences the use of glasses, (unless you have ordered them for him and have found them as ordered), for if he goes to the ordinary optician, the grinding of the lens is the only point in the order to him, while the frame is a matter of taste with the party who brings the order.

These points, while small in themselves, are of much importance, and it will be well to watch them.

## FUNGUS CHALAZICUS, A NEW MICRO-PARASITE,

Written for the Ophthalmic Record by

M. F. WEYMANN, M.D.,

ST. JOSEPH, MO.

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It is natural for physicians to consider a tumor developing in the passages of a secreting gland a simple retention cyst. When, however, careful examination by means of the microscope has shown the fallacy of such an assumption, mere inference no longer has a right to judge. Still, even in science, the general acceptance of well-proven facts is often an exceedingly slow affair.

The little tumor known by the name of chalazion and developing in the Meibomian glands of the eye-lids is a fair illustration of this statement. Although Virchow showed, many years ago, that it is a cysto-plastoma, it still figures in many of our modern text-books as an ordinary cyst. Virchow's nomenclature with reference to this little neoplasm is undoubtedly well chosen, but the term granuloma, as first proposed by Dr. Thomas, of Tours, seems preferable to me.

The name is a full description of the pathological anatomy in one word. The microscope reveals a fibrous capsule, which is probably derived from the membrana propria of the gland. No secretion is found in its cavity, but in its stead we meet countless numbers of lymphoid cells. The latter are embedded in a fibrillated matrix apparently derived from coagulated plasmatic material. In fact, in the central portions fibrillation is often absent or only slightly marked.

From the various parts of the capsule spring strong fibrous bands subdividing the main cavity into numerous irregular spaces. The resemblance suggests *grosso modo* the structure of a lymphatic gland, but the absence of the small final trabeculae does not carry out the comparison. The vascularization is not very abundant, but considering the avascular structure of cartilage we need not wonder at that.

The appearances outlined above class the tumor at once as a granuloma.

Thin sections over stained in carmine and then decolorized by acids afford beautiful pictures and make the subject plain at a mere glance. It might be well to mention that small tumors furnish the best material. They give a view of the totality of the tumor, are more readily hardened, and present a center less brittle and, therefore, less liable to drop out. The fact that some chalazia present gelatinous or fatty contents is no objection, for we all know how easily granulation tissue (especially the *caro luxurians*) undergoes degenerative metamorphoses.

Strange to say, the discovery of the true pathological anatomy caused considerable embarrassment as to the etiology. We all know that unhealthy granulations imply continual irritation for long periods. Many, among them De Wecker, thought that the retained secretion might cause the irritation, but in the very suggestion you can read the doubt in the author's mind. In the first place, no secretion is found in the tumor and, furthermore, secretion-plugs do not cause granulation tissue elsewhere. This is well illustrated in the case of atheromatous tumors, so frequently observed on the scalp. As another possible source DeWecker mentions blepharitis marginalis, by which granulations might be formed at the mouths of the excretory ducts of the Meibomian glands. From this location they might readily extend upward into the glandular follicles proper. This sounds reasonable, but when we consider that many persons are troubled with chalazia without ever having had blepharitis, this view also is unsatisfactory.

With these considerations I went to work in the study of this neoplasm. The result was the discovery of a fungus, which at once explains the whole subject.

The first thing I noticed were numerous spores which appeared in the sections. They were situated in the capsule and in the tissue adjoining it. Toward the center they became fewer in number. Many were seen floating free in the field. Also mycelial branches seemed to penetrate through the capsule. Knowing that spores readily develop in staining fluids and that



thin fibrous tissue might simulate the appearance of hyphæ, I began a systematic search for the mycelium. After many

### FUNGUS CHALAZICUS.

(Drawn by Writer.)



#### EXPLANATION.

Upper half of field: large mass of interlacing filaments, constituting the mycelium. Lower half: a dense mass of the same material, having assumed its form by rolling down the slide during the washing of the mount. The small dots represent spores; some of them are scattered around loose, others still retain their position in the sporangia at the top of some terminal hyphæ.

disappointing trials I succeeded in locating small fragments; they looked like very long and thick bacilli and could be made out only with dazzling lamp light. Focussing showed that these little rods were not only on the surface of the section, but they would come to view successively through its whole thickness. The transmitted light assumed a bluish or greenish tinge, just as in the case of bacilli. In my mind everything was proven, but I felt the difficulty of convincing others, unless I could show a larger part of the mycelium in its entirety. Moreover, the

methods followed out so far did not admit of easy confirmation. I therefore looked about for an easy and decisive *modus demonstrandi*.

I used a solution of caustic potash, (one part of the hydrate to two of water) and put a section in a few drops of this reagent. A cover glass was put on next, and the whole thing warmed for a few seconds over the lamp. After this the preparation was watched under the microscope, at a small inclination of the body. A little blotting paper took up the flowing reagent.

The sections readily dissolved and disappeared before my eyes, leaving the fungus behind. Gentle washing removed the detritus, while a slightly acidulated current cleaned away the last tissue fragments, and also the hydrate of potash. A little magenta readily stains the fungus, but tinction could not make plainer a thing already so plain.

The washing should be done gently, or else the current might wash away fungus, tissue, and all. The mycelium should not be displaced at all, for, whenever it moves on, it takes a kind of rolling movement, and in this manner all its filaments form a thick cord-like mass, in which details cannot be demonstrated without continual change of focus. The best view can be obtained during the action of the alkali, for here the relation of the parasite to the tissue is thoroughly exposed. Often hypha after hypha shows up below and within the tissue, as the latter is dissolved by the caustic.

The sporangia are represented by irregular terminal masses on the filaments, showing numerous spores embedded in its substance; the filaments are of two kinds, the thin and the thick, with the latter greatly predominating. Of some fifty sections taken from three different tumors, every one showed the parasite without fail. From this, I think, the chain of evidence is fully established. Actual cultivation experiments had to be excluded on account of lack of more material.

### CONCLUSIONS.

1. Chalazia are not retention-cysts, but true granulomata.
2. Their appearance in large numbers and in successive periods suggest a parasitic etiology.

3. Their ready reproduction after removal, also points in that direction.

4. The growth of granulation tissue pre-supposes a long-continued irritation of a low grade.

5. A fungus can be demonstrated in chalazia.

6. The "fungus chalazicus" fully explains the etiology of the neoplasm, giving the *causa originis* of the local irritation and of the granuloma resulting therefrom.

7. Hordeola often preceding chalazia, and also having many characters pointing to their parasitic origin, might possibly be caused by the same fungus.

8. The *typical* chalazion must be considered a neoplasm, due to parasitic causes; still, the possibility of a mere retention-cyst cannot be denied, however rare such an occurrence might be.

114 S. 8th St.

## A CASE IN WHICH ATROPINE DROPPED INTO THE EYES FOR REFRACTIVE PURPOSES PRODUCED CONSTITUTIONAL POISONING.

Written for the Ophthalmic Record by

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Ear Hospital; Ophthalmic and Aural Surgeon to the Hospital for  
the Ruptured and Crippled, to the Hackensack Hospital,  
to the House of Mercy, &c., &c.

Dec. 9. 1891, Mrs. Jennie O., æt. 32, widow, referred to me for examination and treatment by Dr. E. Clark Tracy, of this city, complains that she can see to read only a few minutes at a time. After closing her eyes and resting them a while she is able to continue her reading. If she persists in reading without closing and resting her eyes at frequent intervals, she experiences a very unpleasant sensation as if something were *pulling* in her head. She has a great deal of headache which seems to start from her eyes. The right eye pains much worse than the left. When she gets a bad headache her eye-lids are swollen. When she goes out riding on a bright day she almost always returns with a headache.

R. V. =  $\frac{2}{3}$  0 +;  $\frac{2}{5}$  0 — with + 1. D.  $\odot$  + 1.25 D. 45°.

L. V. =  $\frac{2}{3}$  0 +; hm. 0.75 D.

Ophthalmoscopic examination shows no lesion.

Ophthalmoscopic refraction:

R. + 2. D. s.  $\odot$  + 1. D. c. ax. 45°.

L. + 2. D. s.

V. =  $\frac{2}{3}$  0 — with last above glasses.

Hyperphoria 0°, Esophoria 5°. Well marked conjunctivitis with some roughness of palpebral conjunctiva.

Ordered atropine 1% solution, and Coquilles, medium smoke. Dec. 10, a drop of the solution of sulphate of atropia was dropped into each eye last night on retiring, and repeated twice this morning, once before breakfast and once after. She vomited her breakfast and is not feeling well.

R. V. =  $\frac{1.5}{200}$ ;  $\frac{2.0}{50}$ —w. + 2.50 D.  $\ominus$  + 1.25 D. 65°.

L. V. =  $\frac{1.8}{200}$ ;  $\frac{2.0}{30}$  + w. + 2.75 D.

Ophthalmoscopic examination shows an area of delicate changes about both maculæ, that about the left eye being the more marked.

Dec. 11, The patient has been sick at her stomach constantly since using the atropine. She vomited all her meals yesterday and her breakfast this morning. Last night she slept very poorly on account of general nervousness and pain in her eyes and head. When she looks at a face its left eye turns red and the whole left side of the face looks pinched, haggard and drawn into unnatural shapes. The right side of the face looked at is changed, but not nearly to the same extent as the left. About 2 p. m. yesterday she began to see things creeping and crawling about on the carpet where there were none. These creeping things would change in form and size while she was looking at them. She could not talk coherently or carry on a connected conversation. She would forget what she was going to say. This condition of things lasted until she went to sleep last night. She is much better this morning, but is still very nervous.

Dec. 21, the patient has had daily applications to her eye-lids for the conjunctivitis until now.

R. V. =  $\frac{2.0}{40}$ —with + 1.50 D. c. ax. 70°.

L. V. =  $\frac{2.0}{30}$ —with + 0.25 D. c. ax. 95°.

As the weakest spherical glasses added to these cylindrics. produced blurring of vision and an unpleasant "drawing" sensation, I ordered the above for constant use for distant vision.

Next day I gave her for reading and all other near work,

R. + 2. D. s.  $\ominus$  + 1.50 D. c. ax. 70°

L. + 2.50 D. s.  $\ominus$  + 0.25 D. c. ax. 95°



as she read more comfortably with them than with weaker or stronger ones.

Her distance glasses will, probably, have to be changed from time to time for stronger ones, as she will bear them, until, finally, she will wear the reading glasses all the time.

In an eye practice extending over twenty years, this is the first case of well marked constitutional poisoning by sulphate of atropia, *used for determining the refraction*, in an adult, that has come under my observation. I have heard of one or two others but have not seen them. Of course, *local* poisoning is common enough, indeed too common, and it is not rare to see an infant's face flushed with the belladonna effects, but the nausea and delirium depicted above I have not seen before.

I will not close my report of this case without acknowledging the assistance of my associate, Dr. S. M. Payne, in the various steps of the examination.

## **Department of Otology, Laryngology and Rhinology.**

GEO. H. PRICE, M. D., EDITOR, 701½ Church Street,  
NASHVILLE, TENN.

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### **ACUTE SUPPURATION OF THE MIDDLE EAR— MENINGITIS—DEATH—AUTOPSY—NO IN- VOLVEMENT OF THE TEMPORAL BONE.**

*Read by title before American Otological Society, Washington, D. C.  
September, 1891.*

BY J. MORRISON RAY, M.D.,  
LOUISVILLE, KY.

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The opinion has been frequently expressed that meningitis, of a mild and distinctly circumscribed type, due to direct extension, accompanies all cases of acute inflammation of the tympanic cavity. It is common to see violent muco-periosteal inflammation of the middle ear, accompanied by strong evidences of brain complication, and yet no lesion develop; on the other hand, serious meningeal inflammation may show itself in cases where the ear symptoms have not been alarming. A case recently under my care, of meningitis of a fatal nature, rapidly developing upon what seemed to be a mild form of acute suppuration of the tympanum, is offered as evidence in favor of the last statement.

Hattie G., aged 47, was admitted to Louisville City Hospital, Feb. 27, 1891. She had been a patient on a former occasion, suffering from chronic rheumatism, and giving a history of syphilis. She now complained of pain in right side of the head, the ear, and the shoulder, and had old ankylosis of the knee joint. When admitted she had a temperature of 98.6°, respiration 20, and pulse 96. She was given the formulæ used extensively in the institution for chronic rheumatism, composed of potassium iodide and salicylate of soda. Bromidia was given to induce rest.

March 2d, I was asked by Dr. Neal, the interne in charge of the ward, to examine her right ear, as she complained of great pain. I found a reddened drumhead and all the evidence of acute middle ear inflammation. Hot water and leeches were ordered.

March 5th, at my next visit, the membrana tympani had ruptured and pus was flowing freely from the middle ear cavity. The pain was still severe in the right side of the head. Temperature 99°. Pulse 100. Inflated the ear and forced out a quantity of pus. The ear was ordered to be syringed out with a hot carbolic solution, 1 to 40.

March 7th, the suppuration was going on freely. Pain still persisted in the head, and I ordered five grains of calomel and morphine at night.

March 9th. Pain in head persists. Temperature 100. Pulse 98. Delirium at times. No swelling of the canal or tenderness over the mastoid. Pus flowing freely from the perforation in the membrana tampani. Ophthalmoscope showed no optic neuritis, but meningitis evident.

March 10th. Temperature 104°. Pulse 108. Pain in the ear not so great, but continuous in the head. Delirium at times.

March 11th, 8 A.M. Temperature 103. 4 P.M. Temperature 104. Antifebrin in five grain doses added to the treatment.

March 12th. Temperature 102.6, delirium constant. About noon the nurse discovered the patient in a comatose condition and I saw her soon afterwards. Temperature 97°. Pulse 108. There was muttering delirium. Ptosis, divergent squint, dilated pupil, and profound coma. The external canal still full

of pus, no swelling or œdema about the ear, no optic neuritis. Dr. Enright was called in consultation, and it was decided that it was a case of "diffuse purulent meningitis." The patient died eight hours later in coma.

Autopsy by Dr. Marvin. Only the brain was examined. As soon as the calvarium was removed a purulent meningitis, confined to the frontal lobes, was exposed. The pia was opaque and the sulci filled with a greenish pus, which accumulated about the base. The brain contained no abscess. The temporal bone was examined carefully, and only a small spot of discoloration, immediately over the tympanic cavity, was discovered. No evidence of necrosis or communication with the cranial cavity was present. The meningitis was most apparent over the convexity of the anterior lobes, while over the region of the tympanic cavity no pus was present, yet the dura mater was thickened and the blood vessels were distended. The roof of the tympanum, which proved not to be exceptionally thin, was removed and the cavity found to contain blood-stained pus. The autopsy, therefore, showed the case to be one of purulent meningitis, following rapidly upon acute suppuration of the middle ear, and produced not by rupture of the tympanic roof, but either by transmission through the small blood vessels that perforate the bone at this point or by septic infection through the general circulation. Since the meninges overlying the tympanic cavity were not the focus of the purulent process, it seems most reasonable to suppose that the pyogenic microbe was carried by way of the general circulation, rather than through the small perforations in the tympanic roof.

PLASTIC OPERATION TO CLOSE A PERFORATION  
OF THE ALA NASI.

Written for the Ophthalmic Record by

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NEW YORK.

Professor of Ophthalmology in N. Y. Polyclinic, Surgeon New Amsterdam  
Eye, Ear, Nose and Throat Hospital.

Mr. H., 53 years of age, consulted me on Nov. 23rd, 1891, about his nose. Two and a half years ago several operations were made for the removal of an epithelioma by the use of the knife, caustic pastes, and scraping with a sharp spoon. As a result of these several operations a complete eradication of the growth seemed to have resulted, but there remained ever since the healing a perforation of the ala nasi, which is a source of great annoyance to him, by the leakage of the secretion of the nose through it, to obviate which he has been obliged to keep the opening closed with a disc of adhesive plaster. Besides this annoyance the deformity resulting from the perforation was very conspicuous. I therefore advised an operation to close the hole to which he readily consented.

The following was the condition when I examined him: Situated upon the lower part of the ala nasi, about 4 or 5 mm. from its inferior border, and about the same distance from the columnar nasi, is a clean cut, almost circular perforation, opening directly into the nasal fossa, about 5 mm. in diameter and surrounded for about 6 mm. by cicatricial tissue. In order to close this opening the following plastic operation was planned: A flap was made by carrying an incision  $2\frac{1}{2}$  cm. in length along the dorsum, near the columnar naris, upwards towards the root of the nose, and another of the same length along the outer part,



the incisions diverging somewhat from each other to make the face of the flap wider. This flap was now reflected, being careful in its dissection to include as little as possible of the sub-cutaneous tissue, to its base; but as there seemed to be too much traction necessary in sliding it downwards to cover the hole, the tissues were loosened by sub-cutaneous dissection with the scissors.

All of the cicatricial tissue surrounding the opening was now carefully removed, as was also that from the end of the flap. The narrow margin below the opening was made loose by dissection, its upper border raw, and the flap brought down over the hole which it neatly and exactly covered without too much traction. Twelve points of interrupted suture were inserted to hold the flap in neat apposition.

The nasal fossa was now examined by a forehead mirror and it was found that only a very small opening remained. This was closed by one point of suture passed deeply through the Schneiderian mucous membrane.

A piece of bichloride gauze, smeared with carbolized vaseline, covered with a wad of absorbent cotton and held in place by a roller bandage, was now applied and the patient put to bed. Nov. 24, the bandage was removed. The wound seemed to have healed throughout by primary union and there was but little redness or swelling.

Bandage left off Nov. 25. There was a deep red blush on the nose extending to the lower lid of left eye, which looked erysipelalous in character. Four stitches removed. The patient feels badly, has been chilly, and his head aches. He has no fever however. *Liq. plumbi subacetat. cum opium* applied and 15m of *tr. ferri chloridi* given every two hours.

Nov. 26, marked erysipelas affecting both nose and eye-lid, over the dorsum of nose and under the eye-lid, skin raised like a bleb, the contents of the one over nose being purulent.

The stitches were all removed. The flap in apposition except inner incision where there was a slight separation of the edges of the wound. Fluid collodion was applied in strips or narrow bands over the wound to maintain the edges in apposition. *Tr. of iron* continued.

From this time on there was rapid improvement. The lid desquamated, and the skin over the nose came off, but no supuration of the flap took place and the very slight separation of the margins of the wound next the columnar nasi was healing nicely by granulation.

Nov. 30, the patient was discharged. After his return home he again had a slight attack of erysipelas, with a good deal of constitutional disturbance, which affected the right side of the nose and eye-lid. Under the same plan of treatment with the addition of quinine, generous diet, and stimulants, he made a quick recovery.

Dec. 13, he came to my office with the wound entirely healed except a single point of granulation in the lower part of incision next the face, no fistulous opening (which was carefully sought for) into the nasal fossa. The granulation was removed by forceps and the point touched with a stick of silver nitrate. In the nasal fossa corresponding to the former opening there is a very small depression in the mucous membrane, but no discharge through it. The part of the flap next the cheek stands a little higher than that next the nose. He is well satisfied with the result of the operation both as to the correction of the deformity, and in the disappearance of all unpleasant symptoms heretofore experienced.

THE ANATOMICAL AND HISTOLOGICAL  
DISSECTION OF THE HUMAN EAR  
IN THE NORMAL AND DISEASED CONDITION.

BY ADAM POLITZER, M.D.,

Professor of Otology in the Imperial Royal University of Vienna etc.

Translated from the German by

GEORGE STONE.

Dr. Politzer, in this work, which he says is based upon twenty-five years of uninterrupted study of the normal and pathological anatomy and histology of the ear, has given to the profession a work which can but add to his reputation as a great and scientific teacher.

The part devoted to the anatomical and pathologico-anatomical dissection, gives the necessary instruments and methods to remove the organ of hearing from the dead body; these methods are given with great exactness, and will be of great aid to the aural surgeon in making practical dissections for himself. The parts devoted to the anatomical and pathologico-anatomical preparations, and the mounting and preserving of such preparations, are written as only Politzer could write them.

The histological examinations include both the normal and pathological conditions, and occupy a considerable portion of the work; the pathological histology of the labyrinth is particularly interesting.

The information in regard to examination of the tympanic cavity in pathological dissections, and the histological methods and descriptions are especially valuable.

The book is one that will be indispensable not only to every aural surgeon, but also to the general surgeon (particularly in these days of brain surgery), the anatomist and the histologist.

The translator deserves especial credit, having a difficult task in the translating of a book that required, in part at least, an almost literal translation; he seems to have lost himself in the spirit of the author, and has given us a smooth and accurate translation.

E. L. V.

PUBLISHERS—Baillière, Tindall & Cox,

20 and 21 King William St., Strand, London. 1892.

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# THE OPHTHALMIC RECORD.

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## TREATMENT OF TRACHOMA.

Written for the Ophthalmic Record by

W. F. STRANGWAYS, M.D., M.C.P.S.O., &c.

Assistant Ophthalmic Surgeon to the Chicago Policlinic.

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Having had excellent opportunities for watching the progress of this disease under different treatments, I think it strange that we should have some of our ablest contemporary oculists advocating such treatments as excision of the retro-tarsal folds or the thorough scarifying of the conjunctiva, and then scrubbing it with a solution of Hydrarg. Bichlor. (1 to 500) using for a scrub-brush a tooth-brush, the bristles of which are made stiff by shortening them to one-quarter their usual length. Many of your readers will agree with me when I say that some conjunctivas will not tolerate a solution one-sixth the strength of the above, without being rubbed and scrubbed in at the points of a thousand miniature bayonets.

The friends of this treatment of first scarifying and then scrubbing (Manolescu's), claim but little reaction occurs, as a rule, but they do not give us any figures, and they must excuse us if we have doubts and fears, and refuse to accept what appears to us a barbarous treatment, until we have far stronger reasons for casting aside our own judgment, to accept that which was cast aside within the memory of some of us.



Manolescu's treatment is not a new treatment, unless the scrubbing entitles it to such a dignity.

Forty or fifty years ago, the retro-tarsal folds were excised by some, while others resorted to scarifying and the use of the corrosive solution, but experience condemned both treatments to banishment from medical doctrines. (See Lawrence by Hays, 1854).

Experience taught in a very painful and forcible manner, that when the retro-tarsal folds were excised, the eye lost its beauty as well as its comfortable easy movements.

Experience also taught that free scarification left so much contracting scar-tissue, that the patient's condition was often worse than when his trachoma flourished in the recesses of his retro-tarsal folds.

That these treatments should be revived, seems passing strange to me, when I remember that for ten years we have had one treatment incomparably superior in every respect, a treatment which is simple, easily carried out, requires no instruments, save what every practitioner has, leaves no scar tissue to be credited to it, restores more or less completely, the conjunctiva to its normal state, physically and functionally, and makes its cure in from ten to thirty days.

To many, it may seem almost needless to say that this treatment, which so quickly and thoroughly conquers this stubborn disease, is Prof. Hotz's plan of squeezing, yet there are oculists, who, either have never used it or else they carried it out in a very indifferent manner.

I shall give Dr. Hotz's very short description, taken from the Archives of Ophthalmology, Vol. xv, No. 2, 1886, and then make a few comments.

"Upon the upper eye-lid it is usually executed in this way: While the thumb or fore-finger of the left hand is holding the lid everted, I insert the end of the thumb or fore-finger of the right hand, with its palmar surface turned toward the eye-ball, under the eye-lid. Thus the upper tarsal border and the swollen or infiltrated retro-tarsal folds are placed just between the two thumbs (or fore-fingers); and if now these fingers are pushed toward each other, and at the same time the thumb (or the

fore-finger) of the right hand is made to glide slowly forward from under the trachomatous conjunctival fold, this is subjected to a steady and continuous pressure which will force out the contents of the trachoma follicles. By repeating this manipulation several times, if necessary, along the whole breadth of the eye-lid, I can in one treatment remove all the trachoma follicles.

"Upon the lower lid the procedure is a little different, because the fingers can seldom be used with advantage. Here I use an old fashioned iris forceps with a slight bend, and no teeth; with its convex side upon the conjunctiva, the forceps is opened to engage a portion of the trachomatous fold; if now its branches close upon the conjunctiva and the forceps are gradually moved upward, the caught-up conjunctiva is slowly run through the branches of the forceps and thoroughly squeezed, like a wet cloth runs through a wringer. In the same way I deal with follicles in the plica semilunares, or in the ocular conjunctiva.

\* \* \* Short applications of cold water always sufficed to alleviate pain, and on the next day the patient feels much better than before the treatment; \* \* \* in two or three days the conjunctiva can be treated by those remedies necessary to complete the cure. These applications were chosen to suit the different conditions of the conjunctiva in each case. Where the conjunctiva presented only the appearance of simple chronic conjunctivitis with scanty secretions, weak solutions of sublimate (gr.  $\frac{1}{4}$  ad  $\frac{3}{4}$  1) were used; but where I found succulence of the conjunctiva and considerable catarrhal secretion, I gave the preference to solutions of nitrate of silver (gr. v to. x). During the period of this after-treatment the conjunctiva should be inspected from time to time, and any trachoma follicle which may yet be discovered is to be squeezed at once."

To carry out this squeezing process it is absolutely necessary for the surgeon to know how to expose the whole of the upper cul-de sac without using instruments, and it occurs to me, that it might have been well, if Prof. Hotz had added to the above a description of the plan he uses for exposing this otherwise difficult region to explore. But since he did not do so, I shall give it in as few words as possible.

In the eye clinic at the Chicago Polyclinic, I have watched him many times exposing the whole of the cul-de-sac, by first everting the lid in the usual way, then drawing the everted lid upward with one thumb, while the other exerts firm backward pressure on the eye through the lower lid. Of course the patient should be directed to look downward. As the eye is pressed backward, the folds evert beautifully.

To pierce the eye-lid, as done in Manolescu's treatment, is thoroughly bad surgery, as it is a useless and needless breach of continuity of very sensitive tissue.

The pressure in Prof. Hotz's squeezing operation, is never sufficient to injure or bruise the healthy parts of the lid. Some bleeding takes place, but only from the weak, swollen vessels surrounding the trachoma follicles, and there is no other laceration of tissue. It is surprising, as well as pleasing, to watch the jelly-like masses coming out, and it is still more pleasing to afterward hunt for scar tissue, and find none, and this is the one great paramount advantage that this plan of treatment has over all others.

Trachoma has a constant tendency to leave contracting scar tissue, which we all know is a very serious matter, and one that we should use our utmost skill to avoid.

According to Dr. Webster Fox, whose article appeared in January and February number of the *Record*, if Manolescu's operation is followed by its usual sequelæ cicatricial contraction, entropion, trichiasis, or distichiasis, we should perform a Burow's operation. How much better to use a treatment which does not leave the usual cicatricial contracting tissue, especially as it cures as quickly.

Manolescu's treatment requires a general anesthetic, while Prof. Hotz's can be executed, as a rule, with cocaine.

Manolescu's operation is such a serious one, that it cannot be repeated unless absolutely required, whereas, Prof. Hotz's may be repeated as often as necessary.

Manolescu's operation requires much more judgment, and experience.

It is true some men cannot appreciate an operation, unless the brilliant reflections of special instruments adorn its execu-

tion, while others are slow to praise a good operation, unless they can use it to keep their names before the profession by slightly altering (for the worse) some instruments, and giving them their names.

These remarks do not apply to the great army of noble workers in our profession, but it does apply to a few, who force our instrument makers to keep an immense variety of instruments, which necessarily greatly increases the price of each. Every useless instrument carried by the dealers, helps to raise the price of each good and tried instrument. For Prof. Hotz's treatment there is no need of any, save curved forceps.

To cure a disease should mean to restore the diseased parts to the normal state, functionally and physically. This is especially true when applied to diseases of the eye, where each slight change causes such serious, and often life long troubles, hence it is our duty to carefully and faithfully search for treatments which will make such cures, rather than accept such questionable treatments as excision of the cul-de-sac, or Manolescu's operation, because they are recommended by eminent men. Years ago they were weighed in the scales and found wanting.

I understand Dr. Hotz credits Dr. E. Mandelstamm and Dr. P. D. Keyser, each, with independently originating similar treatments.

In conclusion, I wish to say, I would not have trespassed on your space, had any one else referred to Dr. Hotz's treatment.

It is true, Dr. Smith in his letter refers to the "Squeezing treatment," or "Smashing method," but, as to the principles, objects and technique of such operations, his references are vague and misleading.

Chicago, Ill.

A CASE OF CHEMICAL OR CAUSTIC TRAUMATISM  
OF EYE-BALL AND EYE-LIDS, AND THE  
EFFICACY OF MASSAGE IN CLEARING  
THE CORNEA OF TRAUMATIC  
OPACITIES.

Written for the Ophthalmic Record by

WILLIAM H. BALDINGER, M.D.,

GALVESTON, TEXAS.

On Feb. 1st, immediately after the daughter of the patient had instilled by mistake, a saturated sol. Nitrate of Mercury, instead of a harmless acid boracic sol. in rose water prescribed, I was called to see an aged lady (60) to give relief for intense and agonizing pain due to this potent caustic.

Owing to the intense chemosis, etc., a few drops of 20% sol. cocaine was instilled with almost immediate relief. By the aid of a lid retractor, the eye was flushed with luke warm water, and a few drops of 10% sol. ol. ricini cocaine instilled and prescribed, and ordered to be instilled every hour if necessary. One drop of 2% atropine was also instilled to avoid iritic complications.

For three days, my whole aim and endeavor was to give the patient relief from intense and agonizing local pains, even resorting to systemic remedies, but finding cocaine promoted more comfort and relief, local anæsthesia was alone used.

So intense was the chemosis, that I was unable to get a satisfactory view of the eye-ball and conjunctiva of the lids, despite of active antiphlogistic measures, viz:—hot and cold water, and styptic collodion along with 10% sol. cocained castor oil; however, on the 4th. day, by the aid of lid retractions, I made a thorough examination of eye-ball and lids.



Examination disclosed an aggravated inflammation and dense opacity, and slough of the corneal conjunctiva and eye-lids. This decided method of examination causing the patient too severe pain I desisted, after flushings of warm water followed by cocaine.

Fortunately the drop of caustic had been instilled on the inner margin of the eye lid. So intense was the pain and naturally consequent spasm of the eye-lids that but for active measures of the patient and standers-by the destruction would have been more fatal and extensive.

To prevent adhesions of lid to eye-ball (symblepharon), the lid retractors were used freely and almost daily, under local anæsthesia, which disfigurement, along with probable danger of complete loss of sight, confronted me.

As soon as all active symptoms of inflammation had subsided, about the 9th day, I resorted to gentle massage, using 1% ung. hydrarg. ox. flav. with marked improvement. On 9th day after accident,

V = shadows; 11th day v = fingers; 15th day v =  $\frac{3}{200}$ ; 23rd day v =  $\frac{3}{200}$ ; 29th day v =  $\frac{10}{200}$ ; 31st day v =  $\frac{20}{200}$ ; 33rd day v =  $\frac{20}{100}$ ; 35th day v =  $\frac{20}{100}$ ; w. + 1 D v =  $\frac{20}{70}$ .

The lids have once more recovered suppleness, the cornea is only opaque in the upper and lower nasal quadrants, which under massage is rapidly clearing.

This all goes to strengthen my advocacy of gentle massage (occasionally along with other appropriate measures) to hasten the clearing of the cornea of opacities due to traumatism, and also the importance of vigorous personal supervision and active treatment of the patient by the oculist.

2430 Avenue I.

## THREE CASES OF POISONING BY ATROPINE.

Written for the Ophthalmic Record by

R. O. COTTER, M.D.,

MACON, GA.

Reading Dr. Webster's report, in the last issue of the *Record*, of a case of constitutional poisoning from the use of atropine in the eyes, brings to my mind three well marked cases that have occurred in my own practice.

No. 1 was a maiden lady aged 45, in whose eyes I dropped a few drops of a 4 gr. to the ounce solution (the strength I use in refraction work). She was quite delirious in an hour after the instillation.

Her father, who was an old physician of 30 years experience, understood at once what it was, and did nothing for her until the delirium had lasted some 6 hours, when he sent for me and we gave her 2 or 3 teaspoonful doses of paregoric during the day. It took her about 24 hours to recover completely. This lady was a brunette and of a decidedly neurotic temperament.

Case No. 2 was a lady teacher in a seminary here. She was a perfect blonde, but was of a perfectly calm temperament. She was affected in the same manner as case No. 1, though to not so severe a degree. I did nothing for her at all. She was considerably affected for one whole day and it required three or four days time for the effect to pass entirely away.

Case No. 3 was a boy of 12 years. This patient was made very drowsy, but if he was disturbed would jump up and run staggering off, and try to escape from the room, laughing a sort of drunken laugh. I explained the phenomena to his father, who was a highly intelligent minister, and he was not alarmed about his son's condition. The unpleasant symptoms passed away of themselves in half a day.

As I find homatropine so frequently utterly unreliable in my refractive work, when I find it fails me I resort to atropine, and as I realize that I am liable to cause some constitutional symptoms by it in any case, I try to get the solution dropped in carefully and direct them to let the excess of the fluid run out at the outer canthus, and always tell them that it *may* cause them to feel somewhat intoxicated or excited.

My first case occurred in 1889, the second in 1891, the third in January of this year. There was no vomiting in any of my cases. I should think that the *prolonged* vomiting, in Dr. Webster's case, was kept up by the retching and forcing up of bile into the stomach.

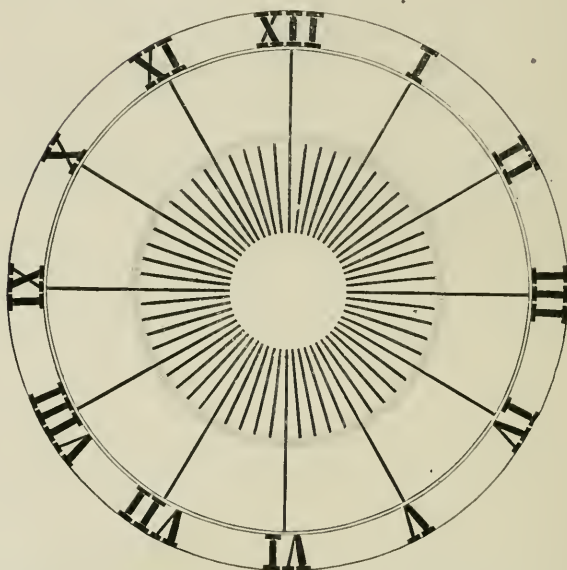
572 Mulberry St.

## A NEW ASTIGMATIC TEST CHART.

Written for the Ophthalmic Record by

L. WEBSTER FOX, M.D.,

PHILADELPHIA, PA.



Ophthalmic, subjective tests, must be adapted to the meanest intellect. In other words, a test which may be simplicity itself to the oculist, is apparently most complex to his patient. The successful ophthalmic surgeon is the one who can make the "dulled wit" appreciate these small differences and give answer to correlative questions.

Having made many experiments with the various astigmatic test cards in use, I have taken the "best out of many," and present to the readers of the *Record* a chart, which has given me the most satisfactory results. The figure above explains itself. The dullest circle at the periphery of the finer radiating lines, in my card is colored *red*, which aids materially in concentrating the attention of patients to the inner circle, when, if astigmatism exists, the meridian is easily ascertained.

To John L. Borsch & Co., Opticians, 1324 Walnut Street, Philadelphia, I am indebted for some suggestions, and also for making these charts.

1304 Walnut St.

## UNIQUE ANOMALY OF RETINAL VEIN.

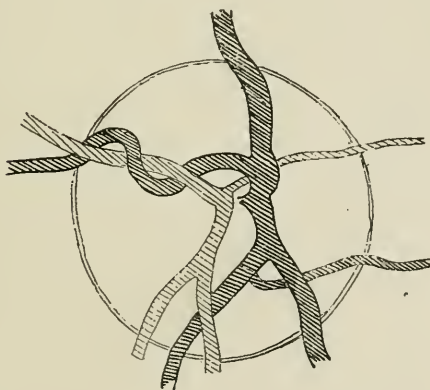
Reported for the Ophthalmic Record by

T. E. MURRELL, M.D.,

LITTLE, ROCK, ARK.

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The accompanying diagram represents the left eye of Mr. G. W. S., which I had occasion to examine this morning. It will be seen that one of the principal retinal veins on emerging upon



the papilla first dips under, then passes over and again under the corresponding artery, thus completely encircling it within the area of the optic disc. The picture presented was so unique that I made a drawing of it while viewed in the erect image.

111 E. 5th St.



## OPHTHALMIC THERAPEUTICS

Translated for the Ophthalmic Record by

F. H. PRITCHARD, M.D.

NORWALK, OHIO.

## SPASM OF THE RETINAL ARTERIES IN INFLUENZA.

Dr. Galezowski (*Le Bulletin Médical*, No. 102, 1891), during the influenza epidemic of 1889-90, has observed several patients suffering from amblyopia, more or less prolonged, where examination of the fundus of the eye revealed no lesion. Hence he attributed the amblyopia to a spasmodic contraction of the retinal arteries. During the month of October, 1891, he also saw several such patients. These spasms vary in duration some last 10 to 15 minutes, when the vision becomes normal, to become again amblyopic when the contraction sets in again. In others the amblyopia may be continuous and last several months. The sulphate of quinine in large doses has given the best results in the treatment of these cases. He administered 15 to 22 grs. per day.

TINCTURE OF IODINE IN INFECTIOUS ULCERS  
OF THE CORNEA.

Dr. Chibret (*Rec. d'Ophthal.*, *Le Bulletin Medical*, No. 104, 1891), has found the tincture of iodine to have, in infectious corneal ulcers, a powerful antiseptic action, an energetic dialytic power, to form no insoluble saline deposits, thus leaving indelible corneal opacities, and finally, to have no destructive action upon the cornea. The ulcer may be touched once or twice a day, by means of a piece of cotton dipped into that liquid, with results superior to those yielded by other means. It has also another remarkable action upon the corneal tissue. It is known that large and deep corneal ulcers, produce, unfortunately, after healing of the lesion, a staphyloma. The writer has found that corneas treated by iodine did not have this complication

when they came to cicatrize, iodine, besides being an antiseptic, seems to exercise a plastic action upon the cornea. The corneal cicatrices following this method are apparently less opaque than in those cases treated otherwise.

#### RHEUMATIC GRANULOMA OF THE IRIS.

Dr. Gillet de Grandmont (*Revista Especial d'Ophthalmologia, Dermatologia, Sifiliografia y Afecciones Urinarias*, No. 10, 1891), calls attention to the great difficulty in making a differential diagnosis between syphilitic condyloma and tubercle of the iris. He cites the case of a syphilitic woman who presented several condylomata of the iris, without associate inflammatory phenomena, and which might easily pass for tubercles as she had no hypopyon. He then gives a case where a granuloma of the iris appeared, with hypopyon, which yielded to anti-rheumatic treatment, and points out the extreme difficulty in diagnosing the various granulomata, condylomata or tubercles of the iris.

A man, forty-eight years of age, in the best of health and who never had been sick, took part in the insurrection of 1871, was captured and sent to Satory and Charbourg, where he was exposed to dampness, hardships and privations of every nature. These brought on a violent attack of rheumatism, which left him with articular deformation of both hands, with retraction of the palmar aponeurosis. June 4th., 1891, he presented himself with an iritis at the lower portion of the iris, at its angle and above the median portion, a yellowish tumor, a little reddened at its vertex, of the volume of a small lentil, was to be seen. Physical examination revealed no sign of pulmonary tuberculosis, while his history gave no trace either of the disease or of either ancient or recent syphilis. Hence, on account of his rheumatic history, he was placed upon the sulpho-ichthyolate of ammonia, a remedy which had given excellent results in three cases of rheumatic iritis, and, in five days the granuloma disappeared, together with the hypopyon and he was able to return to his work. The ichthyolate was prescribed in daily doses of two grams (30 grs.), in capsules containing .25 grams (4 grs.), each.

## EYE SYMPTOMS IN PERIPHERIC TRIGEMINAL AFFECTIONS.

Dr. Widmark (*Klin. Monatsblätter für Augenheilkunde* XXVIII), calls attention to the rarely noticed fact that the peripheral nerve endings of the ophthalmic branch of the trigeminus are often the seat of palpable changes which express themselves as subjective pains in the eye or its surroundings and thus mislead physician and patient as to the true character of the disease. He regards the pain as radiating from the nerve centres, such cases are difficult to diagnosticate when muscular and conjunctival anomalies are present and which apparently point to asthenopia. But the prescribing of a glass or the treatment of the conjunctival catarrh does not cure the disease. The patients still continue to complain of pain, photophobia, lachrymation, obscuration of vision, heaviness of the eyelids, impossibility of using the eyes, etc. By careful examination one finds in the frontal and temporal regions cord-like and painful indurations, which run in the same direction as the nerve-branches, and are apparently due to neuritic or perineuritic processes. In the writer's 30 cases, the disease was found fully as often bilateral as unilateral. The youngest patient was 9 years, the oldest 68 years of age. The majority were women. Among them were several which presented a picture much resembling the affection described by Forster under the name of *copiopia hysterica*, and which is thought to be dependent upon a chronic atrophic parametritis, yet in his cases the genitals were found to have no connection with the disease. He would first carefully examine the trigeminal branches before diagnosing *copiopia hysterica*. These infiltrations were sometimes hard, especially in chronic cases, and sometimes of a doughy consistence, as to simulate, in some cases, oedema. Now and then they would be so distinct as to be perceptible to the eye. They were mostly situated in the connective tissue, and only in a few cases was a sensitiveness to pressure to be observed. The frontal, supratrochlear and naso-ciliary branches were most frequently, the temporal subcutaneous malar less often, affected. Infiltrations in the trapezius or the subjacent muscles may, by central irradiation, produce pains in the eye. The prognosis is good, and treatment,

which consists in daily massage, soon brings relief; even if the pain is increased by the massage, one should still continue. Two to four weeks will suffice for a cure; relapses are rare and yield to renewed treatment. In case the pains are severe one may employ antipyrine or antifebrine.

#### HERPETIC KERATITIS OF INFLUENZA AND ITS TREATMENT.

Prof. Galezowski (*Revista Especial d'Optalmologia*, No. 10, 1891), directs attention to the influence which influenza has upon the eyes, especially the conjunctiva and cornea. The cornea is attacked by preference from its centre and a herpetic keratitis, under the form of small superficial ulcers, with desquamation of the epithelium and preservation of the corneal transparency in the entire extension of the ulcer. The surface of the ulcer is entirely anæsthetic, and one may touch it with a probe without the patient feeling the slightest amount of pain. The fever is but slightly marked, so that neither the physician nor patient notice it and it may be overlooked. There is insomnia, malaise and vertigo which come on periodically, headache and chilly feelings at times. One eye only is, as a rule, attacked but where two are involved the fever is more intense. The disease is undoubtedly due to a peripheric affection of the fifth nerve. The ulcers are liable to become extensive and if not treated may give rise to corneal abscesses.

Neither atropine nor cocaine has any influence upon the ulcers. The cornea being anæsthetic, in its whole extent, the ulcer should be treated with stimulants instead of with sedatives. The general treatment is the same as in grippe, all ocular manifestations of the grippe require the administration of quinine in good doses, without this remedy all treatment is impossible. Locally one should apply aseptic gelatine and keep the eye closed. This aseptic gelatine is in the form of discs, which contain certain quantities of such antiseptics as sublimate, the biniodide of mercury, boric acid, pyoctanin, etc. They cover the ulcer and prevent its being irritated by tears, mucus, etc., and give the ulcer opportunity to heal. Each disc is of an oval form, with a greatest diameter of 2 cms; the principal medicines employed are: cocaine, boric acid, biniodide of mercury, opio-

nine and the cyanide of mercury. Dr. Vignes prefers the copper salts in the treatment of this disease. Dr. Valude uses silolated cotton as an antiseptic dressing.

#### EUROPHEN IN EYE DISEASES.

Dr. D. Juan Santos Termandez (*Cronica Medico quirurgica de la Habana*, Ded. 1891), has used euphen in conjunctivitis, keratitis, traumatism and after operations. In a case, where a cataract operation was performed, the remedy caused the wound to heal without any accident. In a case where lime was gotten into the eye, a salve (1:100), caused the conjunctival injection to disappear and the ulcer to heal uneventfully. A case of scrofulous kerato-conjunctivitis underwent a sensible amelioration under treatment with a euphen salve. A case of marginal keratitis was rapidly improved under the influence of an euphen salve. A wound after an iridectomy healed well under its use. A machinist, who was injured by the end of a bar of iron striking his eye, presented two opacities, conjunctival congestion and nocturnal pains in the eye. A salve of 15 egms. of euphen to 10 grams of vaseline was prescribed. The pains ceased after its first application and the conjunctival congestion soon disappeared. The amount was increased by 5 centigrams without any disagreeable reaction. A young man, employed in a brewery, had some solution of ammonia thrown into his eye. Immediate and intense inflammation followed for five days, suppuration followed, accompanied by intense pains, which radiated into his head and face, preventing sleep. When he entered the clinic the conjunctiva was found oedematous, with secretion of muco-pus in the depths of the conjunctival sac. The entire cornea was gangrenous in its whole extent, while the iris was about to protrude. A boric acid solution was used as an irrigant twice a day and a salve of euphen prescribed. The pains were immediately calmed and suppuration moderated, the cornea taking on its normal aspect at its upper border. The writer regards euphen as superior to any other antiseptic agent used in ocular practice.



# THE OPHTHALMIC RECORD,

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G. C. SAVAGE, M. D., Editor and Publisher,

621½ Church St., Nashville, Tenn.

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TO THE EDITOR OF THE OPHTHALMIC RECORD:

Dear Sir:

In the January and February, double number of your Journal, in a short editorial, you do an injustice to the officers of the Section of Ophthalmology for last year. To quote, you say:

"\* \* \* there are *errors* that will not be repeated in subsequent issues. These errors occur in the discussions which followed the reading of the papers. Some of these are *ugly* and calculated to *slightly irritate* the authors of the discussions." The words which I have underscored are capable of much meaning, but by their vagueness I am unable to arrive at the intended meaning of the author.

As secretary of the Section whose proceedings are brought in question, I feel that it devolves on me to take notice of the criticism. The chairman and myself repeatedly conferred before and during the sessions as to the best interests and methods of work of the Section, and did all in our power to make it the "banner Section of the Association." Every care was taken to get as accurate a report as possible of all discussions, and to this end the secretary furnished abundance of paper and pencils to the members to write out their discussions, repeatedly urging them to do so, but many failed. I well remember the fact of the Secretary going to the Editor of the Ophthalmic Record, at the close of his discussion on the obliquity of the axes in astigmatism, with paper and pencil and personally requesting him to write out his discussion, which he promised, but failed to do.

Having arranged the papers and discussions as well as I could, they were forwarded to the Journal of the Association, and Dr. F. C. Hotz having been selected to edit the Volume of Transactions, they were turned over to him, and under his able management and good judgment, we have a handsome Volume of proceedings that I am sure is a credit to the Section if not to the officers.

In so far as capable I did my work as Secretary conscientiously and without bias towards any one, and I think Dr. Connor will bear me out in this statement, as I trust will also many other members of the Section, for one and all of whom I entertain the highest esteem, and to whom I feel under obligations for courtesies.

The short Editorial by its very vagueness reflects upon the Chairman of the Section, and the Editor of the Volume of Transactions as well as upon the Secretary, and until the Editor of the Ophthalmic Record can be more specific in his charges it were more charitable in him to omit inuendos.

111 E. 5th St.

Very respectfully,

Little Rock, Ark.

T. E. MURRELL.

In reply to Dr. Murrell's letter I beg to say to him, as well as to Dr. Conner and Dr. Hotz, that the criticism of the volume was not intended to reflect in the least on either one of them.

If Dr. Murrell had continued his quotation of the editorial to the end, the following would have been contained in his letter: "On the whole the volume is a very creditable one, and the Section justly feels proud of it. *In subsequent meetings those participating in the discussion of papers will most likely write out what they may have said on the floor.* When this has been done the publisher should take the pains to send to each man a proof for his correction. *Only in this way can perfect accuracy be attained.*" This, it seems to me, places the blame where it belongs, the chief blame being on him who failed to comply with the request of both Chairman Connor and Secretary Murrell, to write out what he may have said in discussion of any paper.

Laboring under the impression that only those discussions that should afterwards be written and handed to the Secretary, would be published, I contented myself by writing out only one or two brief discussions in which I was able, in a few words, to make myself clearly understood. My remarks on *oblique astigmatism*, to which Dr. Murrell refers above, were, by the courtesy of the Section, 10 or more minutes long. Having already fully

published my views on this subject I decided not to write out what I had said in the meeting.

In closing this reply to Dr. Murrell's letter, the Editor of the *Record*, who he seems to think unkindly reflected on himself, Dr. Connor and Dr. Hotz, wishes to say, that in his opinion the Section of Ophthalmology never had better officers than those of last year. As much, if not more, has been said in a former issue of the *Record*.

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It will be pleasant news to those readers of the *Record* who are graduates of the Jefferson Medical College, that the Board of Trustees and the Faculty of that institution have just completed the purchase of two large lots on Broad Street, giving them a frontage of about 300 feet and a depth of 150 feet, upon which they will proceed to erect at once a handsome hospital, lecture hall and laboratory building. The estimated cost of the building is \$50,000. The hospital will be built not only as a suitable building in which to care for the sick and injured, but also will be provided with a large amphitheatre for clinical lectures. The basement of the hospital building will be given over to the various dispensaries, each of which will be provided with large waiting and physicians rooms as well as rooms for direct teaching of students. All the buildings will be absolutely fire proof and provided with patent sprinklers in case their contents catch fire.

The buildings will be ready for occupancy in the session of 1893 and 1894.

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The *Record* would urge that all its readers, who can do so, attend the Detroit meeting of the American Medical Association. The program of the Section of Ophthalmology will be unusually interesting. The banquet to be indulged in by the Section will be a new feature but a very pleasant one.

## Department of Otology, Laryngology and Rhinology.

GEO. H. PRICE, M. D., EDITOR, 701½ Church Street,  
NASHVILLE, TENN.

### I. CASE OF NASAL HYDRORRHŒA. II. A CASE OF ASTHMA, DUE TO INTRA-NASAL CHANGES THE RESULT OF TYPHOID FEVER.

Written for the Ophthalmic Record by

JOHN DUNN, M.D.,

RICHMOND, VA.

I. *Case of Nasal Hydrorrhœa.* W. P. M., 27, book-keeper. Patient was free from nose trouble until 8 years ago, when he had a severe attack of typhoid fever. Since then he has suffered more or less constantly from excessive discharge from the nose. This discharge is a clear, watery fluid of which there seems to him to be an inexhaustible supply in his head. This running at the nose lasts all the year round, although it is more profuse some days than others. So annoying is the necessity to be constantly blowing his nose as long as he is awake, that it has been his custom to remain up at night until he felt that sheer exhaustion would make him fall asleep as soon as he should go to bed. At times, the discharge from his nose has been so continuous and great in amount that he was obliged to keep one hand always at his nose, unfitting him on these days for his position as book-keeper. As soon as he would lie down at night his

nose would close as "tight as a drum," and he would be forced to breathe through his mouth. When he would awake in the morning his throat and mouth would be parched. At times, when he awoke in the morning his lower lids would be so swollen that he could with difficulty open his eyes. This condition of the lids would wear off after he had been up a little while. About 2 years ago patient took a sea voyage. As soon as he was out of sight of land the discharge from his nose ceased, and did not begin again until he returned home.

*Examination of the nose. Anterior exam.:* The nasal air spaces are more contracted than is the case in the average nose. There is a swollen condition of the inferior turbinates so that laterally they nearly touch the septum. Along the lower border of the inferior turbinate on both sides a true hypertrophy has taken place so that the turbinates touch along the floor of the nose. The surface of the lower turbinate has a greyish red appearance. The anterior ends of the middle turbinates appear greyish white and are slightly swollen.

There is an abnormal amount of mucous secretion along the floor of the nose. Septum straight.

Pharynx and naso-pharynx normal. Posterior examination of the nose shows clearly the cause of the excessive discharge. The parts are so swollen by hypertrophy that the passage of air through them is greatly interfered with. The septum is straight, but on both sides, as far forward as can be seen, the membranes over it are ballooned out so that both middle and inferior turbinates touch it, while the membranes over the inferior and middle turbinates show a condition of hypertrophy similar to those of the septum. This condition of the mucous covering of the septum and turbinates is not due to simple swelling of the tissues, as was proven by the fact that their swollen condition was but very little changed by the application of cocaine. In color, the membranes over the septum and turbinates are whitish; are boggy under the probe, and bleed readily. They do not appear to be so firm as diphtheritic membrane and cannot be peeled off. It does not present the appearance of a false membrane, but suggests an excessive growth of the normal mucous membrane, although it is whitish in color. This same whitish



color is seen over the inferior turbinates anteriorly, but there the red of the mucous membrane is in excess.

These hypertrophied mucous membranes resemble in appearance the condition I call, for want of a better name, "white hypertrophy" so often seen over the middle turbinates, when these are hypertrophied under certain conditions. The difference however in this case was that the white appearance here represented an active hypertrophic process in the mucous membrane itself, and not the result of a hypertrophic process in the layers beneath it. Its moist, sodden appearance would have to be seen to be appreciated. Another interesting point is that the membrane was thicker upon the middle tubinates and upper part of the septum posteriorly than upon the middle turbinates anteriorly and inferior turbinates. The secretion is a clear fluid, and never becomes yellowish, purulent or hard, as that discharged from the nose of a person recovering from a cold in the head. The interesting points in connection with the case are several. In the first place, there can be little doubt that the intra-nasal changes were the result of the typhoid fever, appearing as they did, in a healthy nose immediately after an attack of this trouble. The vast amount of clear secretion points to an abnormal condition of the mucous glands of the nose; while the appearance presented by the nasal mucous membrane points to the pathological change, as consisting in a continuous hypertrophy of the epithelial layer and glands of the mucous membrane; the process affecting to a very small degree the subepithelial layers. This argues for the existence of an exciting cause in the lowest epithelial layers of the mucous membrane, which cause found its origin at the time of the fever. The continuance of the trouble for eight years is to be noted. The whitish membrane was thicker over the middle turbinate posteriorly than anteriorly &c. (vid. supra). It is not unlikely that the membrane being thickest here points to this as the region where the mucous glands are most numerous; although the positions of the different parts, and their relative exposure may have had something to do with this condition. The explanation of the fact that, while at sea, this secretion ceased entirely is to a certain extent easy. The value of a solution of salt water in cases of catarrh as a means

of clearing the nose and loosening the secretions is well known to those whose catarrhal troubles are treated by popular remedies. And we all know that during the first few days of a cold in the head when the discharge is most profuse and is as clear as water, that washing the nose with a tolerably strong solution of cooking soda will stop the discharge as if by magic. Unfortunately this effect lasts only a short while and the application of the soda has little value in shortening the duration of the cold, however pleasant its temporary effect may be. The cessation of the discharge in the case here reported is due to the continuous bathing of the nose with the salt-impregnated atmosphere. For the temporarily swollen condition of the tissues of the lower lids, probably the loose tissue below them, I can offer no explanation satisfactory to myself. The hypertrophy along the lower border of the inferior turbinates was unlike the white hypertrophy above mentioned, due to increase above the normal amount, of the submucous connective tissues, and was to a certain appreciable extent contracted by the application of cocaine. The indications for treatment were simple enough. The application of chromic acid to all the parts affected with the white hypertrophy. The removal of actual hypertrophies, in part with snare, in part with the cautery. (The snare was preferred). As soon as the acid was applied to the parts affected, requiring several visits, the excessive secretion ceased and in the course of a few weeks the patient was well.

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II. *A Case of Asthma.* D. L., Italian, age 36. Asthmatic attacks date back four years. The patient speaks English none too well and the accuracy of his history may be questioned. The case is, however, interesting. As far as I can make out, the patient was living near Norfolk, Va., at the time the asthma first began, which it did while he was suffering with malaria, had "malarial fever," which here, in many cases, bears many points of resemblance to the typhoid fever of other regions. The asthma became so bad that his physicians advised him to leave Norfolk and try the mountains to see if the air there would afford him relief. He did so, but found that he had the asthma

as severely as when in Norfolk. Gave the usual history of asthma, which was when he came to Richmond so severe that he was obliged to sit up at night to breathe, etc., etc.

Many loud sibilant rales in the lungs. Certain lesser signs pointed to the nose as the reflex origin of the asthmatic attacks. *Examination. Anteriorly.* Tendency to eczematous condition of the inner aspects of the nostrils, especially along the edges; due in all likelihood, to the irritant character of the nasal secretions. Right nose (N. D.) excessive secretion of mucus which is sticky, not fluid. Inferior turbinate slightly hypertrophied, but showed, as did the whole nose, a decided lack rather than an excess of blood in the membranes. Middle turbinate shows white hypertrophy, not as in the first case, however, of a sodden, glistening appearance, but as this could be imagined to look were the fluid expressed from it; nor was it even like the dry white hypertrophy often found over the middle turbinates. Septum straight. Left nose (N. S.) hypertrophy of inferior turbinate which touches the septum. Hypertrophy of ordinary kind, contracts under cocaine. Excessive thickening of the upper part of cartilaginous septum. Immense spur of the septum, which touches the middle turbinate above and inferior turbinate below. Middle turbinate not visible until tissues on inferior turbinate had been shrunk by cocaine. Condition as in N. D. almost complete temporary occlusion of the left nose anteriorly. *Posteriorly:* N. D. same peculiar whitish appearance over middle and inferior turbinates as found anteriorly, they are, however, not enough swollen or hypertrophied to interfere with the breathing. Considerable amount of muco-pus, along the floor of nose and coming from between middle and inferior turbinates. (There was no disease of the antrum.) Condition in N. S. similar to that found in N. D. only white hypertrophy greater over inferior turbinate. Hypertrophy of inferior turbinate inferiorly on both sides, greater in N. S. Naso-pharynx shows remains of adenoid hypertrophy. Remains of enlarged tonsils. In spite of the hypertrophies over the turbinates the nasal membranes presented a pinched, dried appearance, very peculiar. The white hypertrophy over the turbinates, it seems not improbable, was the result of hypertrophy

both of the epithelial and subepithelial layers of the mucous membranes, and their peculiar appearance in some measure due to bad health of the patient who had suffered severely for four years from asthma, as well as to be the disorganized nervous regulation of the membranes, the result of the pressure of the bony spur in N. S upon the membranes, hypertrophied as the result of fever. As for treatment, the spur was removed from the septum, with a saw. Chromic acid was applied to the white hypertrophy of the turbinates; the hypertrophies along the inferior turbinates were removed. The result was a cessation of the asthmatic attacks, with improvement in the bronchial affection, an improvement which became more marked as time went on. Whether the cure will prove to be a permanent one, I do not undertake to say. It is sufficient to know that the seat of the trouble was in the nose, and here that there seems to be good reasons for believing it was the result of intra-nasal changes produced by typhoid fever.

These two cases have been reported together because they show that intra-nasal pathological conditions, which local treatment can readily cure, may result after typhoid fever. In these two cases the seat of trouble seems to have been in the epithelial layers of the mucous membrane. Case II, shows that a ridge of the septum may exist for years without causing discomfort, but if inflammatory changes take place in the mucous membranes against which it presses, it may then be the origin of great reflex disturbance. Case I, shows one condition of affairs that may be brought on by fever agencies in a perfectly healthy nose; Case II, what may result from same cause in a nose whose membranes have been subject to the catarrhal changes resulting from excessive adenoid tissue of the upper pharynx. In the one case the secretion is clear and watery, in the other the discharge is from a diseased membrane and is more or less purulent.

## RHINITIS-HYPERTROPHIC-ATROPHIC-OZENA.

Written for the Ophthalmic Record by.

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Fetid ozena is a symptom of chronic catarrhal disease of the mucous membranes of the nose, naso-pharynx and buccal cavities, causing destruction of tissue and giving rise to odors through decomposition; it may also be due to the formation of growths, as nasal polypi, calculi, rhinoliths, etc., caused by either specific, strumous or malignant diathesis.

These manifestations are favored by the anatomical structure of these parts.

The mucous membranes are provided extensively throughout with glands; the exception being the nasal fossæ which are very poorly supplied. The secretions of these glands demand considerable blood supply, which is favored by the spongy and erectile structure of the schneiderian membrane, which in the process of disease, becomes first irritated, inflamed and swollen, producing a condition of congestion and hypertrophy, which persists for a variable time, and in those with the diathesis, gradually develops into the shrunken, dry "atrophic" condition, followed by ulcerations penetrating more or less deeply into the tissues, destroying membranes, cartilages, periosteums and bones. The symptoms in the different stages of the developments from the hypertrophic to the atrophic are accompanied by secretions, more or less abundant. In the hypertrophic, we find generally a very thick, creamy and tenacious secretion; flowing outward with considerable difficulty, being retarded by the swollen state of the membranes, thus with more or less evaporation increasing its density and result in formation of crusts, which becoming detached, leave small eroded surfaces which gradually develop into ulcers, penetrating more or less deeply. The visible aspect of the membranes are fairly livid. These conditions may exist from the cradle to the grave. From



the hypertrophic to atrophic stage, years may be taken in developing—often seen in the syphilitic infant. Conditions are also governed and controlled by general health, climate and treatment. Secretions in time become less abundant, membrane becomes pale and thin. Epithelium decay and glands are destroyed, giving appearance to the eye of increased nasal space. Secretions practically nil. Firm dry crusts predominate and are fetid.

Treatment, if *persistent*, will always afford relief. Most important fact to impress upon the patient's mind, is the *almost* hopeless character of a cure, and that his comfort will entirely depend upon his home treatment. Have him value the nasal toilet as being first in importance, and to make it his morning and evening duty.

The medicines required are few, apparatus exceedingly simple: a long nozzle invalid feeding cup to be used to convey medicated hot water to the nose, and poured therein while patient sniffs back into mouth, thereby flushing and washing thoroughly the entire tract. A DeVilbis spray, for using medicated fluid vaseline, completes the outfit.

The efficacy of treatment depends upon thorough cleansing, and the removal of all crusts from the entire tract and for this purpose I find, after years of trial, that the remedy most successful in my practice, is a preparation called Mentholine, diluted in the proportion of drachm to the ounce of *hot* water. It seems to clean away the secretions and dislodges crusts and leaves the membrane less irritated. After thorough cleansing a solution of ichthyol in fluid white vaseline, perfumed with citronella, and to be used in DeVilbis spray every night and morning. This treatment to be followed until the membranes become clean and free from excoriation and ulcerated conditions; then the ichthyol and vaseline medication can be discontinued, and the toilet douche always continued. If morbid growths are present, they should be removed; deviations of septums, if extensive, should be straightened or removed.

The following formula is suggested for use as spray:

R: Ichthyol	- - -	5 i.
Menthol Cryst	- -	gr. v.
Oil Citronella	- -	gtt. x.
Fluid Vaseline	White ad	5 ii.

## ECZEMA OF THE SCALP, AURICLES AND EXTERNAL AUDITORY CANALS, COMPLICATED WITH SEBORRHOEA AND OTORRHOEA.

Written for the Ophthalmic Record by

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January 2nd, '92, a patient, a policeman, presented himself at my office with the above condition of things, requesting treatment. The course followed is here given as possibly interesting and helpful to some reader.

1. *Otorrhœa*. This was of long standing, several years, now worse, now better; sometimes it had affected the hearing; but when seen by me the hearing was practically normal, though the Eustachian tubes were both impervious to air, and each membrana tympani contained a small perforation. For the relief of this condition, the nose and nasopharynx were carefully cleansed with peroxide of hydrogen, and the orifices of the Eustachian tube and neighboring parts gently touched with a cotton pledget saturated with albolene 90%, menthol and camphor mixed, 10%. This useful combination, first known by myself through the columns of the *Ophthalmic Record*, contracts the tissues, and enlarges hypertrophied upper air passages generally. The second day the Eustachian tubes were found open when tested with the Politzer bag. The external canals were also cleansed with hydrogen peroxide, and loosely filled with boracic acid held in place by a cotton wad. The fourth day the perforations of the drum membranes were found closed, and the otorrhœa, consequently, stopped.

2. *Seborrhœa*. In this instance the secretion adhered closely to the scalp, presenting, when removed with forceps, a leathery, scab-like appearance, the patches varying in size up to half an inch in length. The skin beneath looked slightly raw when the

dandruff was peeled off, and this condition, we think, combined with the irritating kitchen remedies used for its cure—a severe shampoo with common petroleum oil for example,—caused the eczema described below: though that of the auricles and auditory canals was no doubt mainly caused by the long continued otorrhœa. The patient was directed to annoint the head carefully with fresh lard on retiring, and in the morning to wash the same with warm water and soap. The effect was good, though we presume only temporary.

3. *Eczema of Scalp, Auricles and External Canals.* This was of some six weeks standing and confined mostly to the frontal and temporal regions on the scalp; but invaded the whole anterior surface of the auricles, the external auditory canals, and the scaly appearances of the membranæ tympanarum around the edges indicated that the disease had already attacked them. At the first treatment, all scabs were removed, and the parts cleansed with peroxide of hydrogen, the remedy being gently rubbed in with the finger, and plenty of the solution used (15 volumes strength). Listerine undiluted was next applied simply to correct any malodorous condition. The sores were then anointed with the following mixture: Iodinii, acidi Tan., ā ā ʒ s s; alcohol q. s. to dissolve iodine; aquae, oss; mix, filter and evaporate to ʒ ii; add glycerine, ʒ iv; acidi carbol m iv. This prescription is essentially one suggested by Sajous for nasal use, but as it contains remedies suitable for the present case, was employed with excellent results, the scalp being practically healed in three weeks time. The auricles did not progress so favorably, though a steady improvement was easily seen. A change in treatment was therefore made. After the usual cleansing, the parts were moistened with glycerine and water, and the following powder applied both to the auricles and canals: Acidi Tan., iodoformi, acaciae, aa ʒ ii; morph. sulph., gr. ii. Under this change, the improvement was rapid, so much so that the patient ceased to present himself at my office Jan. 28th, though a week's further treatment would have been of advantage to all concerned.

## THREE CASES OF FOREIGN BODY IN THE NOSE.

BY GEO. H. PRICE, M.D.

NASHVILLE, TENN.

There seems to be a peculiar disposition on the part of children to introduce various substances into the nasal cavities, a disposition which causes, in its results, trouble to themselves and much anxiety to parents.

About one month since I was summoned by telephone to come at once to see a child who had a seed or bean of some kind in the nose. I made haste and went at once, I found upon arrival the mother holding the child, a little girl of six or eight years, upon her lap and with one hand firmly holding the nose to prevent, as she supposed, the further passage of the body into the nasal cavity. It had been only a short time since the child informed its mother of the accident, and hence there was no obstruction by swelling to interfere with an examination of the parts. The body I learned was the seed of a prune and was accidentally introduced by the child while scratching the nose with the end of the seed. As soon as I threw the light into the left nasal cavity, I could see high up and far back, wedged between the turbinated bones and the septum the offending body. It had been forced into this position by the child in attempting to remove it with a hair pin before the mother had learned of the accident. I took hold of the seed with a pair of small nasal forceps and made an effort to remove it, but the first attempt failed as the forceps slipped off. Again introducing them, this time well upon the body of the seed, I brought it away, much to the joy of the mother, who was anxiously watching me during the whole time.

The seed was fully  $\frac{5}{8}$ " of an inch long,  $\frac{5}{16}$ " to  $\frac{3}{8}$ " wide, and something more than  $\frac{1}{8}$ " thick.

The second case, which happened in the same family and with a younger child, came under observation only a few days since. This time the father came to the office and brought his baby, a little girl of three or four years of age, saying that he wanted

me to examine her nose. The history given threw no light on the case other than that there had been for several days a discharge from the right nostril, and a disposition on the part of the little one to pick at the nose. The head mirror and speculum soon brought to light the seeming cause of the trouble.

I discovered mass covered by mucus which was thin and easily wiped away, leaving behind a body of a yellowish color, located one-half to three-quarters of an inch from the opening and which the mucous membrane was beginning to cover from slight swelling. By force we managed to keep the little patient still until I could get a firm grasp on the body which came away at once. Investigation proved it to be the remnant of the calyx from an orange with a small portion of the stem attached. This was doubtless quite small when introduced, possibly not more than  $\frac{1}{4}$ " in diameter, but the constant bathing of secretions had caused it to swell, until when removed it was  $\frac{5}{16}$ " or more in diameter. The irritation to the parts had caused some acid discharge and the margin of the nose was somewhat excoriated.

With directions to cleanse the part and apply some soothing salve the little patient was sent on her way.

The third case was one of more interest and had been the cause of much anxiety to the family, as it was of four or five years standing. This patient was brought to me by a professional friend from a distance, into whose hands the patient had fallen about one year since. The parents had consulted him in regard to the case, and when he examined the same, he thought he discovered something in the left nasal cavity though he was unable to make out the nature of the obstruction; since, the child, which was then some five years old, was so fractious as to prevent a thorough examination without anæsthesia and this was refused by the parents. He could then feel the obstruction with a probe, and to him the sensation was as though there was necrosing bone. The history given was that the child had suffered from a discharge from the nose since she was about two years old, this discharge being dark and foul smelling, also causing excoriation of nose and lip. There was no fact to cause them to think it was a foreign body save that of an obstruction, and this had come on so early as to cause them to attribute the



condition to something else, though they knew not what. These were the facts laid before me when the child came to the office for examination and treatment. I managed to secure the confidence of the child and began to investigate. I discovered the obstruction which seemed to be a hypertrophied condition of the mucous membrane, covered by a thick discharge. They then informed me that the little patient had had a fall on face, hurting her nose, which was slightly swollen at this time, after which they thought the body had been dislodged and thrown off.

I introduced a probe and soon discovered something which gave the sensation of dead bone. The child immediately became unmanageable, and refused to allow me to use the probe again. I advised the use of chloroform to enable me to make a thorough examination, but this met with objections. The physician who came with the patient, after explaining the importance of this measure, secured the consent of her sister and we soon made a more thorough examination.

Now we could feel and pass the probe freely above and below the obstruction, and also move it up and down, though the membranes were so much swollen, we could not see it. After one or two attempts to take hold of the body, I was able to bring away a small portion, which I put aside and again used the forceps. In a few minutes I brought away a mass about as large as the end of my little finger, which was covered with a deposit of calcareous looking material, which a little rubbing and washing brought away, revealing a shoe button with the eye wanting. I then examined the first piece removed, and found it the remains of the brass eye, which under the influence of the secretions had almost entirely disintegrated, so that it crumbled between my fingers.

There was more or less bleeding, and the blood was mixed with a discharge, having a bad odor. I examined with the probe to see if there was any exposed bone, but could discover none.

I suggested an antiseptic wash to be used to keep the parts clean, and an oily spray to soothe and hasten the reduction of the inflammation.

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GLAUCOMA, ITS NATURE AND TREATMENT.

Written for the Ophthalmic Record by

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*Abstract of Remarks at the meeting of the Vermont State Medical  
Society, October 16, 1891.*

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Mr. President, Gentlemen of the Vermont State Medical Society:

When the invitation was given me to address you at this meeting, I experienced considerable satisfaction in the thought that an opportunity was afforded to say a few words to you upon the nature and treatment of Glaucoma, one of the most formidable diseases of the eye, the diagnosis and treatment of which must be early made and correctly applied to save the unfortunate patient from impending blindness. And I am all the more anxious to address you upon this subject because the recollection of some unhappy cases, which too clearly manifested the unfamiliarity of some of our colleagues with the nature of this trouble, is still fresh in my mind. Not many months ago I was consulted by a patient for defective vision. The sight had been almost entirely destroyed, and his physician, in order to

facilitate the examination at my office, had put the eyes thoroughly under the influence of atropine. An ophthalmoscopic examination at once revealed the fact that the patient had cataract in both eyes, and that this defect of the lens was due to a deeper seated trouble, that is to say Glaucoma. The sight was already nearly destroyed and the atropine had only served to make the patient worse. On the same day I was consulted by a physician in regard to a case which had been diagnosticated as cerebral hyperæmia, the symptoms being intense pain in the head, great intolerance of light, intense congestion of the eye-ball; and from which the patient recovered, but with both eyes absolutely blind. This was, I believe, although I did not see the patient, a case of acute irritative Glaucoma, and not one of hyperæmia of the brain. Not long after this I was consulted by a woman whose eye had been injured one year previously by a contusing blow of considerable force. Immediately following this injury the sight had been reduced to perception of light, and the patient had suffered nearly every day from pains in the eye-ball, and through the corresponding side of her head. This suffering had been so intense that she had been obliged to acquire the morphine habit, and only large doses of that narcotic would enable her to enjoy comfort whatever. During the year the eye had become somewhat enlarged, and a tendency to hernia of the choroid was manifest at the time of her first visit to me. An ophthalmoscopic examination immediately showed that the lens had been dislocated backward into the vitreous, and that the patient had suffered all these months from the symptoms of secondary Glaucoma.

Glaucoma occurs both as a primary and as a secondary affection, and the symptoms of it are always due to an increase of pressure in the interior of the eye.

Primary Glaucoma is subdivided into three classes: Acute Irritative\* Glaucoma, Chronic Irritative Glaucoma, and Glaucoma Simplex. Now, acute irritative and chronic irritative Glaucoma may be preceded by a *Prodromal Stage*. During this

\* Most writers on Ophthalmology speak of *inflammatory* rather than *irritative* Glaucoma. It seems to me that there is much force in DeWecker's reasons for preferring to speak of the symptoms of Glaucoma as irritative.

stage the patient is troubled with cloudy vision. It seems to him that a veil or a mist is before his sight, and sometimes when looking at gas jets, or other luminous objects, he sees surrounding them a halo having the hues of the rainbow. This symptom of rainbow-vision is not necessarily significant of Glaucoma, for it occurs also in patients whose conjunctivæ secrete a rather viscid discharge. These patients also complain of difficulty in reading, especially in the evening, and many of them have been obliged to change their reading glasses frequently within a few months. If you were examining one of these eyes at such a time, you would observe that the pupil moves rather sluggishly under the influence of light, that it is rather larger than the other, and that the tension of the eye-ball is slightly above that of the healthy eye. An ophthalmoscopic examination of such an eye will show that the cornea is slightly cloudy, and that the optic nerve appears slightly redder than normal, and that the pulsation in the veins is more marked, and possibly there may be seen some pulsation in the retinal arteries. These prodromal symptoms in a patient predisposed to Glaucoma may be caused by overwork, and especially by strong emotion. They may last only for a few days, and disappear entirely as soon as the patient has recovered his normal bodily vigor. They will recur from time to time in response to the same influences which first produced them, until finally the patient may completely recover, or more likely he will develop the more marked symptoms of the acute irritative or of the chronic irritative variety of the disease. Other cases may, after a few days of these prodromal symptoms, pass at once, without any remission, into acute irritative glaucoma.

The *symptoms* of the *Acute Irritative variety* of Glaucoma come on suddenly, and often at night during sleep. The patient is awakened by severe pain in the eye. This pain radiates over the temple down into the face and teeth, and back into the head, and its severity is sometimes almost unendurable. Associated with this are commonly nausea and vomiting, great prostration, sometimes delirium, and a rise of bodily temperature. The eye is red, the superficial vessels are engorged, the cornea is cloudy, the anterior chamber shallow, the pupil semi-dilated and immova-

ble to light, the eye-ball hard and tender to pressure, and the vision very much impaired. In a small number of cases the sight is permanently destroyed within twenty-four hours. More frequently, however, the course of the disease is longer, and after days or weeks of agony the eye becomes totally blind, the other symptoms gradually abate, and the patient recovers with the loss of sight in the affected eye. During the first days of the attack it is almost impossible to look deeply into the eye with the ophthalmoscope owing to the cloudiness of the cornea; but after the cornea has again become clear, you can observe the optic nerve, and you find that it no longer presents a normal appearance. You find that it is deeply excavated, that the excavation extends clear around the nerve to the periphery of it, that the retinal vessels in their course from the bottom of the excavation to the retina are obscured for a certain distance by the overhanging edge of the excavation.

In the *Chronic Irritative variety of Glaucoma*, the symptoms may begin with a prodromal stage, such as has already been described, and the patient may go on suffering from irregular attacks of irritative symptoms which are like those of the acute irritative form, but are usually of less severity; and from each of these attacks the patient recovers with a still greater impairment of his acuteness of vision. During the intervals between these attacks we find that the intraocular pressure is above normal, that the optic nerve shows a progressing excavation, that occasionally the retinal arteries will show some pulsation, and that the retinal veins are somewhat congested. The optic nerve is no longer of normal color, but it acquires an increasing palor until by virtue of the death of the fibres of the nerve it has a bluish-white appearance. The field of vision is always contracted, and especially is this contraction of the field marked upon the nasal side. In the course of a few months the vision is permanently destroyed.

The symptoms observed in the course of *Glaucoma Simplex* resemble those already mentioned, but every sign of irritation is wanting. It is, therefore, the most insidious of the varieties of this disease, and it is not at all uncommon for ophthalmologists to see patients in whom Glaucoma Simplex has progressed



to an advanced stage, while the patients are utterly unconscious that they have any serious disease of the eye. Such patients have found that their glasses are becoming more and more unsatisfactory, and by the accident of testing the vision of each of the eyes alternately, they have discovered that the vision of the affected eye is very much less acute than it should be. A careful examination of such eyes would reveal a steadily increasing intraocular pressure. In other instances, however, although an increase of the intraocular pressure is undoubtedly present, the crude means at our disposal for measuring such changes are not delicate enough to detect it. The pupil is semi-dilated, and does not respond to light, or to accommodative efforts. The media are perfectly clear, and an ophthalmoscopic examination may be satisfactorily conducted. The peculiar glaucomatous excavation of the optic nerve is present, and an examination of the field of vision shows that it is contracted, and especially on the nasal side. The progress of this form of Glaucoma is comparatively slow. It ends in pressure-atrophy of the optic nerve, and consequent total blindness, and during the months preceeding the final destruction of sight, the lens may become cataractous.

As I have previously stated, the symptoms of Glaucoma are due to an increase in the intraocular tension. The pressure within the eye-ball may be raised, by either an increase in the production of the fluids of the eye-ball, while the outward current remains normal, or by the current outward being impeded, while the production of the intraocular fluids remains normal. It is now the general opinion of ophthalmologists that the cause of the increase in the intraocular pressure in Glaucoma is due to an impediment to the outward current, and this impediment is found to exist at the filtration angle where the iris and cornea meet. There are two channels by which the intraocular fluids escape from the eye-ball: one is by way of the optic nerve, this is the minor current; the major current is formed from the vitreous through the zone of Zinn into the posterior chamber, through the pupil into the anterior chamber, out at the filtration angle through the spaces of Fontana. If this filtration angle be narrowed by any cause, then the intraocular fluids are backed

up. The consequence is that the iris bulges forward, and therefore the anterior chamber becomes shallower, the cornea is subjected to increased pressure, and therefore it becomes cloudy; the filament of the third nerve, which supplies the sphincter muscle of the iris is subjected to pressure, and therefore the pupil becomes semi-dilated, and does not respond to light; the nerve fibres supplying the ciliary muscle are likewise subjected to pressure, and therefore the accommodation is impaired; the delicate fibres of the optic nerve, as they emerge at the papilla, are likewise pressed upon and pushed backward towards the lamina cribrosa, and if this pressure be continued for a sufficient time, pressure atrophy must ensue, and the excavation at the disc become deeper and deeper. Pulsation in the retinal veins is also more marked as a consequence of pressure upon them, as they pass over the edge of the excavation, and so likewise is induced the pulsation sometimes observed in the retinal arteries. The contraction observed in the field of vision is due to anæsthesia of the retina produced by continuous pressure upon it.

Now, the *prognosis* of Glaucoma is always grave and depends to a considerable extent upon the early diagnosis, and the treatment adopted. It is the rule that both eyes are affected, but the second eye may not be attacked by the disease until many years later.

The *treatment* of the prodromal stage, when the symptoms are not very urgent, consists in restoring the general vigor of the body, absolute rest of the eyes, a moderate diet, and sufficient sleep. A one grain solution of sulphate of eserine may be instilled into the eye if necessary, in sufficient amount to produce contraction of the pupil. The treatment of the acute irritative and chronic irritative form of Glaucoma consists in the early performance of an iridectomy. This operation should be performed as early as possible after the diagnosis of the malady has been made; but if you do not feel competent to perform this operation yourselves, and if several hours must elapse before the services of an oculist can be secured, you may control the pain by opium, by hot applications to the eye, by abstracting blood from the temple, and especially by dropping into the eye a one or two grain solution of sulphate of eserine. Although

eserine may control the symptoms, it is, nevertheless, best to operate upon these eyes, because experience has shown that iridectomy, above all other varieties of treatment, is the most certain to save the sight of the patient. The result of the operation, if performed early, are oftentimes surprisingly good. I have performed iridectomy upon these patients by cocaine anæsthesia, but would not recommend such practice, where the object of the operation is not merely to stop pain, but to restore vision. For in spite of the liberal use of cocaine, the operation is quite painful, and a nervous patient might cause dislocation of the lens or a prolapse of the vitreous, either of which would severely complicate the cure. Ether anæsthesia, as a routine practice, ought to be adopted for operations upon glaucomatous patients. Occasionally, Glaucoma is complicated by hemorrhagic retinitis, and such cases are often spoken of as hemorrhagic glaucoma. When this complication exists, and an iridectomy is performed, the retinal vessels may burst during the operation and the eye be destroyed in consequence. I have operated upon one patient suffering from hemorrhagic glaucoma. His left eye had been blinded by the disease, and his right eye had become affected some months before he consulted me. I attempted to control the disease by eserine drops, and succeeded in doing so for a few months, but at length the effect of the eserine became unsatisfactory. The patient was steadily losing his sight, and after considerable hesitation, I decided to operate upon him, after explaining to him the dangers of an operation in his case. I determined to make an iridectomy rather than a sclerotomy, for the reason I did not think that a sclerotomy would be sufficient. I therefore operated upon him, under cocaine anæsthesia, he being a very cool and courageous patient. I made the corneal section very slowly with a Graefe knife, in order to lower the intraocular pressure as gently as possible. No hemorrhage occurring, the patient made a good recovery, the disease was checked by the operation, and after a few months all signs of retinitis had disappeared, and now but for a rather high degree of corneal astigmatism, the patient's vision would be very acute.

The treatment of Glaucoma Simplex consists in iridectomy and eserine. When the diagnosis is correct; in other words, when we are dealing with a case of true glaucoma simplex, and not one of simple atrophy of the optic nerve, an iridectomy will be beneficial to the patient. But in these cases there is less need for haste than in the other varieties of this disease, and therefore some time may be devoted to an attempt to control the symptoms by means of eserine.

Time will not permit me to discuss more fully this important subject. I must pass now to *Secondary Glaucoma* with the remark that it also depends upon an increase in the intraocular pressure for its symptomatology. Such cases are in general the consequence of plastic traumatism or inflammation of the iris, which gives rise to obstruction to the outward current in the intraocular fluids. And the treatment consists as a rule in the establishment of an artificial pupil or in removal of the eye-ball.

In conclusion, let me warn you against the indiscriminate use of atropine drops in the treatment of diseased eyes. Atropine is a very useful medicinal agent in ocular therapeutics when administered to the proper cases. But in Glaucoma of any variety it is injurious: for its physiological effect is such that the intraocular tension is increased by it. I know that the authors of some works on *Materia Medica* make the opposite statement; they tell you that atropine *lowers* the tension within the eyeball. *This is a great mistake.* I have observed one interesting case in which atropine drops certainly increased the intraocular tension. My patient had been struck upon his closed eye by a piece of iron with such force that the crystalline lens was dislocated downward and backward. There was some irritation of the iris, and I instilled atropine drops into the eye. I am perfectly certain that there was no pulsation in the retinal arteries prior to that time. On the following day there was very marked pulsation in the retinal arteries of the atropinized eye. The drug was discontinued, and after a day or two the pulsations had entirely ceased; and, although I examined the eye many times afterward, I did not again detect any sign of pulsation in it.

THE FIXED CONTRACTION OF THE FIELD OF  
VISION IN GLAUCOMA IS DEPENDENT UPON :

1st. A BREAK IN THE CONTINUITY OF THE OPTIC NERVE FIBRES AND  
THE LAYER OF RODS AND CONES, DUE TO TENSION.

2nd. CHANGES IN THE LAYER OF RODS AND CONES, PRODUCED  
BY PROLONGED PRESSURE.

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Several theories have been advanced to account for the contraction of the field of vision in glaucoma which, briefly stated, are as follows:

It has been supposed that pressure directly upon the fibres in the nerve, at the margin of the cupped disc, leads to blindness; again that increased pressure upon the retina as a whole is the cause; and others entertain the opinion that the blindness, which comes by stages of contraction of the field, is due to interference with the blood supply of the retina caused by pressure. As none of these theories have been accepted as final, the question may be considered as open to discussion or advancement of other opinions touching the probable causes of this feature of the disease.

In order to open the consideration of this question in a systematic manner, it will be well to state a few propositions depending upon the characteristic features or symptoms of this condition and then draw such conclusions as seem to be compatible with these propositions.

1st. Contraction of the field of vision, in glaucoma, is a feature more or less marked in all forms of the disease.

2nd. It is progressive.

3rd. It increases with the increase of tension and decreases as this symptom decreases.

4th. The fixed contraction is in direct relation to the cupping of the disc, as a rule, though exceptions may occur.



5th. The contraction bears a certain relation to the distribution of the filaments or fibres of the optic nerve.

6th. The rods and cones, their distribution, relation and structure, a factor to be considered in the contraction of the field.

If now we begin by considering the above propositions we will be able to arrive at the conclusions desired, namely, the probable cause of the contraction of the field in this disease.

1st. The contraction of the field of vision in glaucoma, is a symptom more or less marked in all forms of this disease.

This we might presume to say, would hardly find a dissenting voice.

In the Glaucoma Simplex of Donders, where the various symptoms of the disease are less marked than in any other, we find this very characteristic condition playing an important part in diagnosing the trouble. Here, as a matter of fact, we find that tension and cupping of the disc with presbyopia and contraction of the field seem to go hand in hand. As the tension increases the cupping becomes more and more noticeable and the limitation of the field more marked, until finally the eye passes into a state beyond which its function is lost. This may be the case with one eye and the patient not discover the loss, since no inflammatory change is sufficiently set up to call the attention of the patient to his true condition.

If careful and frequent observations are made it will be discovered that in these cases the cupping of the disc begins at the center of the nerve and progresses toward the edge of the disc, when the case becomes, according to the ophthalmoscope, one of glaucoma, as indicated finally by the acute bending of the vessels.

In the *acute inflammatory* form we find soon developing an indistinctness of the eccentric vision, which may be more marked in certain portions of the field, usually the nasal side, and this increases until it becomes a pronounced contraction of the field. The intensity of this symptom depends upon the intensity of the other pathognomonic symptoms of the disease.

In Chronic Inflammatory Glaucoma, where the symptoms remit only, we find the field gradually contracting more and more until vision may be eccentric and reduced to perception of light, though this be intensified by means of a condensing lens.

We note one form where we find a probable exception to this. It is secondary or consecutive glaucoma. Here we find the field almost normal or but little affected, no excavation or arterial pulsation as a rule

These facts will serve I think to justify the first proposition.

2nd. It is progressive.

The points developed in the first proposition, as to the constancy and peculiar manifestation of this feature, are recognized by all as facts concerning which there is no dispute. We noted that in glaucoma simplex as there was a recession of the tension and general dimness of vision, the field improved, but that it did not recover fully its original extent. This is also true as to the acute inflammatory type, though in such cases much more marked, that is, the field is much more limited and constitutes one of the distressing features to the patient. The chronic inflammatory form is no exception, but rather confirms the statement, that the contraction in the field is progressive.

3rd. It increases with the increase of tension and decreases as this symptom decreases.

It is hardly necessary to go over the facts upon which this proposition is based, for this is a well marked feature and a fact beyond dispute; in reality, tension is a significant or almost a pathognomonic symptom of this disease, and is recognized as a factor of prime importance in the reduction of the field. The reduction of tension by any operation, temporarily if not permanently improves the vision both as to acuity and extent of field. So much stress indeed, is laid upon this when done early enough, and so much is expected of it that it is considered as almost criminal to neglect the operation and the opportunity

4th. The fixed contraction is in direct relation to the cupping of the disc, as a rule, though exceptions may occur.

I use the term "fixed contraction" advisedly, for up to the time that the cupping of the disc becomes pronounced, we have noticed that the retina regains, in a large measure, its function as to field, though it may be below the normal in acuteness. However when the cup is established and the condition is one of fully developed glaucoma then the vision is markedly limited as to field and also acuteness. Such an important factor is this,

that if we should examine an eye with the ophthalmoscope and discover a decided cup of a glaucomatous type, we would at once conclude that the field was defective and in proportion to the cupping.

There is one point I desire to call attention to here and it is this: the field suffers less in those cases where the cupping has been most gradual, as in the simple form of glaucoma. This is shown in a marked degree by two cases related by Schmidt-Rimpler.

It may be observed at this point that this in all probability comes from the gradual adjusting of the filaments of the optic nerve to their new condition of tension and elongation, also to the fact that the rods and cones have assumed their new relation so gradually as to cause no sudden disturbance of their functions. A congenital cup of the glaucomatous type must not be lost sight of as a probability.

5th. The contraction of the field bears a certain relation to the distribution of the filaments of the optic nerve.

It is now generally conceded as a fact that the filaments of the optic nerve as they expand and are distributed to the retina are not regular, in the sense of an equal distribution of the filaments to all parts of the surface, but rather to the contrary. The filaments after separating at the disc are given off in greater number toward the nasal side of the retina, decreasing as we go toward the temporal side, while their final arrangement is still more complex. Those which supply the macula while they, according to Samelsohn, enter upon the temporal side of the disc, yet they came from the central part of the nerve near to its entrance, through the lamina cribrosa. Again, according to Bunge, "the optic fibres situated at the periphery in the vicinity of the globe, appear to be destined for the portions of the retina next to the entrance of the nerve, while the periphery of the retina is supplied by the fibres in the middle of the nerve." It is also reasonable to suppose that there is more or less irregularity in this arrangement. From the foregoing we discover that these fibres which supply the macula change their course from the center of the nerve just behind the eye, to the temporal side thus traversing the half diameter of the nerve, which makes

them longer in proportion, while at the same time by this peculiar relation rendering them more capable of bearing the strain thrown upon them by the cupping of the disc, since they thus tend toward the side to which they are later pressed by the cupping process.

This separation of the nerve fibres toward the nasal, in large numbers, and toward the temporal in smaller, produces what we term the physiological cup, or excavation which is easily seen near the temporal side of the disc.

We must also remember that these filaments or fibres on entering the bulb or eye, lose their medullated appearance and are spread out simply as axis cylinders.

These axis cylinders as they diverge, covering the retina, are seen to anastomose at very acute angles and form a plexus such as is met with just before the final termination of nerves generally. These fibres are arranged in bundles and these grow thinner and thinner as they go toward the ora serrata, and the distance between them more and more, until finally we find only single axis cylinders and these quite scattered. These grow extremely delicate before they finally terminate in the layer of ganglion cells. .

It will be remembered that the greater number of these fibres are given off toward the nasal side of the retina, and hence the anastomosis will be freer, and in their final distribution the fibres will be more numerous and extend farther toward the ora serrata on the nasal side of the retina, gradually growing less numerous until the temporal side is reached, where they are few and therefore farther apart, hence their restraining power is less and their continuity more liable to be disturbed. It is well to keep in mind the fact that these fibres are extremely attenuated at their final termination or distribution.

6th. The rods and cones, their distribution, relation and structure, a factor to be considered in the contraction of the field.

As to the distribution of the rods and cones it is safe to say that histologists are generally agreed that the cones are more numerous in the neighborhood of the macula, while the rods predominate in the peripheral portion of the retina, both resting upon the membrana limitans externa in a perpendicular position,

except the cones in the region of the macula, which have a peculiar arrangement to be noticed later.

The rods consist essentially of two members or parts, an external and an internal, both consisting of an albuminoid substance which is extremely perishable. The external member of the rod is truncated, while the internal is pyramidal and extends by a very fine and friable point beyond the external limiting membrane, where it finally terminates in a most delicate filament which penetrates the external granular layer. The external members of the rods are finally resolved into thin transverse plates or discs superimposed upon each other, they also present longitudinal striations. The internal member presents a granular appearance and is also striated, and by some observers is said to be fibrillated. The cones, flask shaped and shorter than the rods, are seated upon the external limiting membrane, and immediately beneath this membrane is the cone granule, which is in the external granular layer.

The body of the cone varies in form and size from broad or stumpy to thin and slender. The ultimate structure of this part is similar to that of the rod. The external part or member is thin and pointed and is called the cone style, this is of the same general structure as the outer or external member of the rods and like it has a tendency to separate into discs. The "bacillary elipsoids" of Krause which undergo the most rapid decomposition are also found in the human cones, a fact to be remembered.

The question as to the part played by the circulation in the retina has been presented by others, and has received more or less consideration, but I shall not discuss this.

With the points herein stated held in mind, I shall now begin to formulate, that, which to me, seems a reasonable theory for the contraction of the field of vision in this disease, namely glaucoma.

In the first place I shall rehearse a little. I think that all are ready to admit the truth of my propositions which briefly stated are as follows: That the contraction of the field is a symptom or feature of all forms of glaucoma, that this symptom is progressive, that it increases with the increase of tension and



diminishes as this symptom diminishes, that it is in direct relation to the cupping of the disc, that it bears a certain relation to the distribution of the filaments, or fibres of the optic nerve, that the distribution and structure of the rods and cones are factors to be considered. Now while you may be ready to admit that these, as facts of observation may be true, the reason for this condition, which we may call the resultant of these various factors, is another thing, and I may say the one upon which you will not coincide in the theory I hold, unless it contains something upon which you can base an opinion.

The first point to which I would direct your special attention is this, the contraction increases as the tension and the reverse.

Why is this? If you will observe the cases reported by others, and those which have come under your own care, you remember that this feature of tension is one of prime importance, so much so in fact, that it is almost a pathognomonic symptom of glaucoma or the glaucomatous condition. If the case be one of quite recent origin the ophthalmoscope may fail to reveal any disturbance in the general fundus as to circulation, surface appearance of the disc or retina, yet if the patient complain of certain subjective symptoms and the tension be the least marked, you will immediately suspect glaucoma, and at once examine the field. The field may be unchanged, yet you suspect trouble of the character above named. The patient will be kept under observation and ordered to report. Suppose the treatment resorted to is not successful and in a short time you find the field contracted, though you fail to discover any change in the fundus save a more marked physiological excavation of the disc, (or perchance not even this,) an anterior chamber a little more shallow than ordinary and the pupil slightly dilated or stationary, but the tension increasing, are you not ready to entertain the opinion that you are dealing with a case of glaucoma? And is not your reason based mainly on tension and contraction of field? But what is causing this contraction? As the tension is increased upon the whole of the globe, which the sense of touch demonstrates, it is also causing trouble in the nerve filaments.

What is this trouble or what is the nature of the interference? You will remember that these filaments in their final distribution are exceedingly attenuated and very delicate, hence their function is easily disturbed and this function is disturbed by this tension. This disturbance is two-fold in its nature.

What is this two-fold nature of tension in its ordinary sense?

First I will say, *actual tension* upon the nerve fibres, exerted through the cupping of the disc, which allows them to be pressed back and thus drawn upon.

Second, this tension, as ordinarily understood, has a pressure or compression factor which we must also consider. In the first place it causes a partial paresis of the most anterior fibres, and as these are fewest and most delicate, it is accordingly most marked in its effect in the outer limits of their distribution. If now the tension subside, this temporary paresis is relieved and the field resumes its original extent, but if the tension continue then the contraction becomes *fixed contraction* to a certain extent, and the liberation of the tension will not relieve this feature, since the state of paresis has passed and at the same time another condition has been set up whereby the contraction must remain as such, though the other symptoms, which I am not considering, are in the main relieved. Now then, as to this so called fixed contraction. By this I do not intend to convey the impression, that the contraction is itself fixed in extent, but rather that contraction is now a fixed factor with which we are confronted, but which is also progressive and as such must be retarded as far as possible.

Now then as to the consideration of causes of this fixed contraction. These are complex in their nature and will require reference to what has been said as to the distribution of the nerve filaments, and also the rods and cones, their distribution, relation to other parts of the retina and their structure.

It will be remembered that in the arrangement and final distribution of the nerve fibres, I called attention to the fact that they grow extremely delicate and are much separated, that is their anastomosis is less pronounced, on account of being fewer in the outer portions of the retina. This attenuation of the fibres, their reduction in numbers as well as the loss of

anastomosis, will cause a depreciation in the ability of this layer as a whole to withstand a direct tensile strain, hence we would expect to find the field contracting as these conditions obtain, and as a matter of fact we observe this result, for we discover by actual test the nasal portion of the field is as a rule first lost, which as all of us know means that the temporal portion of the retina is the first to feel the effect of this tensile strain. But how has this tension produced this effect? We note that the tension of the globe of the eye is  $+1$ ,  $+2$ , or may be  $+3$ , this means that the portion of the globe which is least able to resist this strain, must give way, and this we see in the cupping of the disc, or we may say a pressing back of the nerve as a whole. This pressing back of the nerve as a whole, means that the individual fibres are elongated, and that this elongation is most pronounced in those fibres which are the most displaced. We have seen that the central fibres are those most displaced and hence they are those which must from the first feel the most strain. Now while the individual fibres will, under strain, stretch to a certain extent, yet we also recognize that there is a limit to this stretching, which when reached, means that something must give way, and further that this giving way or rupture will be in that portion which is least capable of sustaining this strain. therefore we would expect to find this rupturing of these attenuated nerve fibres in the outer limits of the retina, and more especially in those portions where they are fewest or where the individual fibre bears the greatest amount of this tensile strain. Now then, it is reasonable to say that *fixed contraction* supervenes when elongation ceases, and rupture takes place in the nerve fibres at their entrance into the retina as a whole. But if this be not sufficient let us pass to the outer layer and investigate there.

While the pressure, causing the general tension of the globe, is producing a paresis in the delicate terminations of the nerve filaments, it is also producing a change in the most external layer of the retina, namely, that of the rods and cones.

How is this? It will be remembered that in the distribution of these bodies the rods are more numerous in that portion of the retina which lies toward the ora serrata, again it will be

remembered that these rods are set on and extend through the external limiting membrane in the form of a most delicate process, which the slightest disturbance will cause to deteriorate. Further they extend from this membrane to the pigmentary epithelium of the choroid or the 10th layer of the retina, and they are composed of that most readily destructible substance, namely, albuminoid material. The cones on the other hand, while they are similar in structure are sessile upon the external limiting membrane, and in the outer regions at least of the retina do not extend to the aforesaid coat of the choroid. Now pressure, acting purely on a mechanical basis, would cause a compression in the rods, and from this very compression would bring about a change in their structure which is so susceptible to any alteration in their normal condition. This change may be one of two kinds or perchance both.

First, tension on the nerve fibres of the whole retina, causing a shifting of that portion of this complex structure contained between the internal and external limiting membranes, which would first affect those delicate filaments projecting from the rods into and through the external limiting membrane thus producing a break in the continuity of the conducting apparatus of the rods. Or again this mechanical element of pressure may cause a change in the granular and fibrillated internal member of the rod, or a fissuring or resolution of the external member into plates or discs. As the pressure increased, the tension on the optic nerve fibres would also increase, since the cupping would be more pronounced, the shifting of the retina more decided and the cones would finally become involved. Some may ask, how is it that the cones are not affected by this pressure while the rods are? There are several reasons.

We can for all practical purposes divide the retinal surface into three zones. *The first* may be called the rod zone, the outer or anterior zone. *The second* the rod-cone zone, a mixed or the middle zone. *The third* cone zone, the inner or posterior zone.

Now as to the reasons for the variation in the results produced by the tension and pressure on these three zones.

You will note that I use the terms tension and pressure in

this connection as applied to the immediate effect upon the nerve fibres and layer of rods and cones.

The first reason which considers the rod-zone, is based upon two factors: one, the rods being of low perceptive power, while at the same time, from their structure and relation to the *membrana limitans externa*, most liable to degenerate under abnormal conditions, renders this zone prone to loss of function.

The second factor is, that the fibers of the optic nerve which supply this zone are located centrally in the disc, and as a consequence when the cupping takes place they are from the nature of the case, subject to more tension, in being not only pushed back to the extreme depth of the cup but also displaced more than those which are nearer the margin.

The second reason is also one which contains several points for consideration. We must remember that we are now dealing with the middle or rod-cone zone. Here we find the longer rods surrounding the cones in several rings being much more numerous than the cones. This being the case we would naturally expect the rods, from their nature and arrangement with reference to the general structure of the retina as heretofore pointed out, to first feel the pressure exerted directly upon this layer. Again the fibres at the optic nerve are more numerous in this zone, while at the same-time they are situated nearer the margin of the disc and are consequently subjected to less tension by the cupping process. When the pressure has been exerted for a considerable length of time, this layer is necessarily compressed and the cones are then subjected to this direct mechanical force, which will cause the same changes in them as was brought about in the structure of the more external rods, namely a change in the structure and I think mainly in the "cone style," which like the outer member of the rod undergoes rapid changes under abnormal conditions.

Again in the internal member or body of the cone at its junction with the "cone style," we find the "bacillary elipsoids" of Krause, which according to Schultze "are extremely rapid in decomposition."

The arrangement of the rod-cone zone, the relation of its component elements and the manner in which the fibres of the



nerve are placed in the disc, as well as the fact that these elements are more numerous, will develop the reason for its resisting the encroachments of contraction.

The third and last reason for this variation in the contraction of the field of vision now comes up for consideration.

The histological features of the cone zone are of special importance, and hence I call attention to those which seem to require consideration.

In the outer limits of this zone the histological features are but slightly different from those of the rod-cone zone, but as we approach the macula lutea, important changes in the relation of component parts of the retina are taking place, which become more pronounced as we approach this most sensitive portion of the retina.

As we approach this point and even some distance from it, we find that the layer of optic nerve fibres begins to disappear, so that before we reach the macula this layer has entirely disappeared (Schultze). Other important changes take place in the various layers of the retina, but only two of these will be considered as bearing specially upon this question. In this locality while the retina as a whole has decreased much in thickness, yet there is an increase in the layers between the external limiting membrane and the internal granular layer, further the rod and cone fibres in the external fibre layer of Henle, are no longer perpendicular but rather run in an oblique direction until at the fovea they are almost horizontal in their direction (Bergmann, H. Muller). Again the layer of cones, (I refer only to these as the rods have about disappeared), has also undergone important changes. The cones have now, on account of crowding together, grown longer and quite slender, and some time before the macula has been reached, have also lost their perpendicular direction until at the very center they lie in an oblique direction.

Now the same reasoning which applied to the "rod-cone" zone, will apply to the outer limits of this cone-zone as the pressure and tension continue and progress, but less rapid for the reasons before stated, hence will direct attention to that portion of this zone characterized by the last enumerated features.

First I will call attention to the fact that the nerve fibres which supply this portion of the retina do not penetrate at right angles, and hence the pressure is not brought to bear upon these fibres at an acute bend while at the same time the tension exerted is in a direct line, hence there is no disposition or tendency to cause a shifting in the relative position of the various layers of the retina, as a whole. Thus two of the most important factors in causing a disturbance are in a measure eliminated. In the next place we have seen that the cones themselves are no longer in a perpendicular position and hence the pressure is brought upon these delicate bodies just in that direction, which they are partially designed to bear, namely a more crowded position.

Another point which pertains to the nerve fibres in this locality, is, that from their number, the anastomosis is more complex, and hence if the conductivity of some should be reduced or obliterated, this anastomosis would maintain a sufficient correlation of the parts to retard the contraction.

The eccentricity of vision is explained by this theory, since those parts of the retina which lie farthest from the disc must suffer most on account of the peculiar arrangement and distribution of the nerve fibres. So also the fact that the contraction begins in the nasal field, showing a disturbance first in the temporal portion of the retina.

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## DR. ROOSA'S VIEWS ON ASTIGMATISM.

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In a recent issue of the Medical Record, Dr. Roosa advocates the idea of correcting astigmatism only, for the relief of asthenopia in patients who have compound hypermetropic astigmatism, leaving uncorrected even as much as three dioptries of hypermetropia. With the consent of Dr. Roosa and the publishers of the Medical Record, the paper referred to will be reproduced in the last number of the current volume of this *Journal*, with the full understanding that his views will be combated in a subsequent issue. Dr. Roosa's paper will be reproduced in order that we may not be charged with unfairness in the criticism which will be published. A full and fair discussion of questions of importance is the only way in which a correct judgment can be reached.

PHILADELPHIA POLYCLINIC.

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On the third page of cover will be found the advertisement of this Institution. In every one of its departments it is unexcelled. The Professors in the Department of Ophthalmology are earnest and capable men. A personal acquaintance with these men enables the editor of this *Journal* to say that the instruction in this department will be thorough and complete. No young man wishing to perfect himself in Ophthalmic learning will ever regret having had for his teachers Jackson, Risley and de Schweinitz. As much can be said for the professors in the departments of Otology, Laryngology and Rhinology.

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GO TO THE DETROIT MEETING.

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We expected to be able to give in this issue an idea of what the Section of Ophthalmology will offer us at the June meeting, but, the program not having been published, we are unable to do so. Our confidence in the Chairman and Secretary (Dr. J. L. Thompson and Dr. de Schweinitz), makes us bold to assert that the meeting will be a very profitable one. Don't fail to attend.

We think that the Journal of the Association has made a mistake in not publishing the program of the various Sections. It is to be hoped that it may do so yet in time to awaken that interest in the profession which such information always arouses, so that the Detroit meeting may be the largest and best ever held by the Association.

## GEMEINFÄSSLICHE DARSTELLUNG DER REFRACTIONSANOMALIEN.

Mit Rücksicht auf Assentirung und Superarbitrirung nach dem gegenwärtigem Standpunkten der Ophthalmologie und mit Berücksichtigung der einschlagigen Instructionen und Verordnungen seit dem Jahre 1874.

By DR. KARL HOOR,

Imperial and Royal Regimen Regimental Physician of the Garrison Hospital, No. 17, and Docent at the Royal University of Buda-Pesth, Hungary. 86 pp. Vienna. Alfred Holder, Publisher.

The writer herewith presents an excellent and eminently scientific work on the anomalies of refraction with reference, especially their importance to the examining military physician whose office it is to examine the recruits and determine as to their military fitness. The work is divided into four sections. The first is devoted to the introduction, the number of the lenses, the dioptric system, prisms, emmetropia, myopia, hypermetropia and accommodation. The second is consecrated to the degree of visual acuity, functional determination of the furthest visual point, determination of the nearest visual point, and breadth of accommodation. The third section includes the determination of the refraction by means of the ophthalmoscope, of the inverted image, Schmidt-Rimpler's refractometer of the upright image and by means of the sciascope. The fourth section is devoted to the anomalies of refraction, myopia, hypermetropia, anisometropia, aphakia, astigmatism, presbyopia and spasm of accommodation. The work, though very scientific and forming one of the communications of the imperial and royal sanitary committee, and especially designed as an aid to the military physician, will be a valuable addition to the library of the ophthalmologist.

F. H. P.



\*SUPPURATION OF THE MIDDLE EAR,  
COMPLICATED WITH ABSCESS OF  
THE NECK, WITH REPORT OF A CASE.

Written for the Ophthalmic Record by  
E. OLIVER BELT, M. D.,  
WASHINGTON, D. C.

Abscess of the neck as a complication of otitis media is of such infrequent occurrence, and of such grave import in making a prognosis, that I feel I need make no apology for reporting the following case.

On Feb. 17, I was called in consultation with Dr. W. Sinclair Bowen, to see Mr. S, a lawyer, aged 53 years who presented the following history. With the exception of an attack of meningitis some years back which left him blind in the left eye, his general health had been very good up to a few years ago when he commenced to drink excessively. He suddenly gave up drinking about three months ago and a few weeks later was taken ill with grippe. The right ear soon became involved, and he suffered intensely until relieved by bursting of the drum. Dr. Bowen was then called in and found a discharge from the ear which continued in spite of treatment, after the patient had sufficiently recovered from the grippe to resume his usual work at his office. After several weeks he became restless at night, was not able to sleep, and complained of pain in the right ear and over that side of the head. I first saw the patient on Feb. 17th, which was about six weeks after the beginning of the otorrhœa. I found the discharge still profuse, the ear and surrounding tissues somewhat painful and swollen, and hearing with my watch  $\frac{0}{40}$ . The external and middle ear were full of pus, which was evacuated with syringe and hot water and by inflation with the Politzer ear bag. The ear was ordered to be syringed with hot water every two hours and a sol. of Pyoktanin (1-1000) instilled after each cleansing. The mastoid region was painted with Iodine. Inflation by the Politzer method was practised once or twice a day, after which fluid injected into the

\*Read before the Medical Society of the District of Columbia, March 16th. 1892.

ear would pass into the throat, showing that there was good drainage through the Eustachean tube. For the next few days he suffered much less pain, and rested well. Leeches were not found necessary. The slight swelling about the ear subsided, but the discharge continued very profuse. Zinc. sulph. gr. ij to  $\mathfrak{z}\text{j}$  of a saturated solution of boracic acid was ordered to be used after each cleansing of the ear, the pyoktanin then being used only once a day. Feb. 22nd. there was some swelling along the sterno-cleido-mastoid muscle about two inches below the auricle. Appetite poor, ordered phospho-muriate of quinine comp. The next few days the swelling and discharge were less. 25th, quinine grs. v. twice a day was ordered. 26 and 27th. much less discharge, weather was fine and he had been going to his office a few hours each day, stopping to see me going and returning. 28th, a cold wintry day I insisted upon his remaining in doors which he did henceforth. Temp. and pulse normal, but swelling below the auricle was a little greater and more painful. Poultices were ordered to be applied constantly. The mastoid was not red, swollen or tender, the discharge was less but was very thick and tenacious but not offensive. There were no granulations about the meatus or drum-head. Condition remained about the same for the next several days, but he would take very little nourishment. He was usually constipated, for this calomel and magnesia were given. On March 3rd. he had considerable thirst, temp.  $97^{\circ}$  pulse 100, swelling of the neck muscles greater. March 4th. Dr. James Kerr was called in consultation. Patient was decidedly weaker than he had been, somewhat listless, and indifferent to what was being done, pulse 100, temp.  $97^{\circ}$  a. m.,  $98^{\circ}$  p. m. Deep fluctuation could be made out under the sterno-cleido-mastoid muscle for the first time. We decided that the pus should be evacuated, and at 12:30 the next day we met for that purpose. At first the patient was averse to having the operation performed but finally consented. He was dull and much weaker than usual. After much persuasion he sat up for me to cleanse the ear, then walked into the adjoining room to be operated upon. He was opposed to taking chloroform or ether, so a few injections of cocaine were made over the mastoid process and over the abscess. Under strict

antisepsis Dr. Kerr operated, assisted by Dr. Bowen and myself. Carefully cutting through the sterno-cleido-mastoid muscle and deep fascia, quite a large quantity of pus was evacuated. While cutting through the muscle the ear filled with pus. As these abscesses are nearly always the result of inflammation of the mastoid cells or periosteum, the mastoid was cut down upon. There was no evidence of peri-ostitis. The cells were then perforated with a drill but no pus was found. A bichloride solution 1-2000 was injected but it did not pass through into the tympanum. Pus seemed to be entering the abscess cavity directly from under the auricle. This cavity was syringed with the bichloride solution and both wounds filled with iodoform gauze. The patient stood the operation very well, had a good pulse but his face and extremities were a little cold. There was less sensibility to cutting than was expected from the cocaine alone. At five o'clock Dr. Bowen and I saw him again. He had been sleeping since the operation and we found him in a semi-conscious state. An enema of warm water was given and he was induced to take some beef tea. Very little pus was found in the ear. Dr. Bowen called again at 11 o'clock, condition about the same. There was no pus in the ear. At 12:30 just twelve hours after the operation the patient quietly died, apparently of exhaustion. No autopsy was held.

Cases of suppuration of the middle ear which terminate fatally are usually complicated with mastoid disease. But this is not always so, and death results from meningitis, cerebral abscess, hemorrhage, thrombosis, septicemia or exhaustion. In this case there was no evidence of meningitis, hemorrhage, thrombosis or septicemia. There was no headache except occasionally over the right side of the head, and there was absence of delirium, vertigo, nausea, vomiting, chills, sweats and paralysis. The pupil was normal and vision was not impaired. There was no fever, and during the last few days of his illness his pulse ranged from 100 to 110. The slight stupidity and sub-normal temperature for two or three days suggested the presence of cerebral abscess, but this complication is usually accompanied with a slow pulse, and the sub normal temperature

in such cases is most marked in the evening,\* which was not so in this case; and in the absence of all other symptoms of brain abscess I am inclined to think that the fatal ending was due entirely to exhaustion. In looking over the literature of the subject I find very few cases of abscess of the neck secondary to ear trouble reported. Many text books do not refer to the subject more than to say that it is a grave complication. Pomeroy says that "Bezold, in the *Deutsche Med. Wochenschrift*, July 9th. 1881, describes a rather exceptional manner in which mastoid cell disease involves the muscles of the neck. He has found that in some cases the mastoid bone at the digastric fossa, that is on the inner surface of the process, contains numerous cells which approach so near the surface of the bone that it is readily cut into with a knife, or even a probe may break through. At this unprotected point the pus escapes, and burrows deeply among the muscles of the neck. Such cases usually terminate fatally, either by exhaustion, or by involvement of the vertebra or base of the cranium with symptoms of paralysis, by oedema glottidis, or by burrowing of pus in the thoracic cavity. Deep incision and drainage caused a few of these cases to recover." Further on in speaking of fatal complications arising from suppurative otitis, Pomeroy says: "Purulent inflammation of the mastoid cells, when the mastoid ruptures at the inferior portion, at or near the digastric fossa, or in the outer part of the osseous meatus, causing the pus to burrow beneath the muscles of the neck may result fatally from the exhaustion incident to the purulent process."

Dr. J. Orne Green, in speaking of such cases says† "In case of extension into the digastric fossa, the indications are to evacuate the pus as soon after the carious perforation of the bone as possible." The accident he says is a rare one, his experience being limited to three cases, all of which showed the characteristic cellulitis of the neck described by Bezold. Two of the cases occurred years ago, and after developing deep abscesses in the neck died, one from pyemia, and one from exhaustion, the third after an incision into the mastoid made a tedious recovery.

\* E. A. Baker. *The Lancet* 1887 vol. j p. 1175

† Reference Hand book of the Med. Science, Vol. ii p. 619.

Dr. Roosa in his treatise on diseases of the ear refers to two somewhat similar cases which recovered.

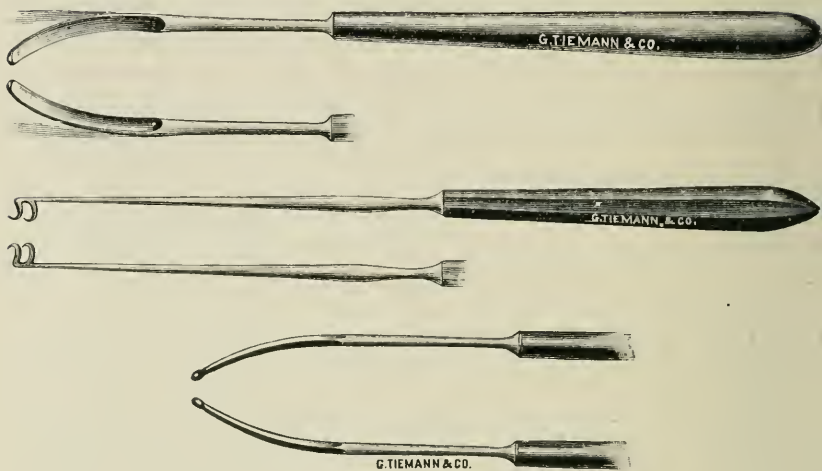
In one case aged 23, the neck was swollen down to the clavicle, the mastoid region was swollen but not red or tender. The mastoid cells were opened with a drill, pus was found. Three weeks later an incision was made through the sterno-cleido-mastoid muscle and a large quantity of pus was evacuated. From this time the patient began to improve and finally recovered. The second patient was 45 years of age. He had acute otitis media with great pain, the drum head was incised, suppuration followed. Later on there was slight tenderness and swelling of the mastoid. A month after the beginning of the trouble the muscles of the neck were pronounced to be in a state of inflammation. For the next ten days the temperature ranged from  $98\frac{1}{4}$  to  $99\frac{1}{2}$ , with the pulse from 90 to 100. The swelling in the course of the sterno-cleido-mastoid muscle, and about the neck increased and the symptoms pointed to abscess. Consultations were held with six or eight of the leading aurists and surgeons of New York. They decided that operative interference was not indicated and that supporting treatment was demanded. Whiskey and milk, iron and quinine were given, and poultices were constantly applied to the neck, after much suffering the swelling of the neck gradually subsided and the patient recovered.

From a careful study of these cases I am inclined to think that we may be too conservative in regard to operating. Pus may form under the deep fascia of the neck some time before we have any positive external indication of it, and though it is possible for the suppuration to cease and the pus to be absorbed without surgical interference, it is usually after a great deal of suffering and there is risk of septicemia; and by the time we have positive evidence of the presence of pus the patient may be too exhausted to stand the operation. So in these cases when the cervical swelling does not promptly yield to our usual treatment and there is much suffering or exhaustion, cutting down upon the mastoid, and into the cells if necessary and through the muscles of the neck would seem to be indicated. Under the careful antiseptic surgery of the present day there is but little risk in the operations, and though pus should not be found the depletion of the parts would usually be beneficial.

Too much attention cannot be given to keeping up the strength of the patient by good food, tonics and stimulants.



## HOBBS' NEW TONSIL KNIVES AND HOOKS.\*



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Ex-President of the American Rhinological Association,  
Member Georgia State Medical Association, The Atlanta Society of  
Medicine, Etc., Etc.

The instruments† illustrated above are the practical outcome of my efforts through several years to do away with some of the objections to the instruments most commonly used for excising hypertrophied tonsils, for example: the ring tonsilotomes, the guillotines, wire loupes, etc., etc. I still, however, use the ring blades in young children and in other cases where the tonsil projects decidedly with a base but little, if at all, larger than the body.

Most tonsillar hypertrophies do not, however, conform to the above varieties; hence I have sought a more suitable instrument.

\*Read before the Georgia State Medical Association, at Columbus, Ga., April 22, 1892.

†These Instruments, as made by Geo. Tiemann & Co., are aseptic. They can be placed in boiling water as there are no rivets or glue in the handles.

The objection to the guillotine or ringed instruments, is that the latter, especially, so often leaves a margin of bruised tissue, which, in many cases, ends in a slough; and, with neither of them is the operator quite certain of the exact amount of the tonsil he will clip, especially if the attempt is made on a tonsil that is soft, broad and nodulated. The cold wire snare causes great pain and requires a much longer time, and, moreover, it leaves a contused stump unless the whole organ be extirpated, which I never do intentionally. The hot wire, even with the most approved guards, endangers the pillars and is, like the cold wire, quite a formidable instrument, at least, in the mind of the patient.

The simplest means and the one least formidable to the patient, other things being equal, is best. Especially is this true if the instrument chosen can be relied upon to do the work quickly, leave a smooth stump that will heal without a slough and, at the same time, make the section just where the operator desires it.

Some years ago I used the ordinary blunt bistoury with either vulsellum forceps or a tenaculum. I found the vulsellum objectionable because its hold could not be quickly loosened in case of gagging, and the tenaculum hook was too long and tore loose more readily than my double hook. This latter instrument, with its hooks on the side, is also more easily introduced, and it can be instantly loosened by a slight rotation of the handle.

The blades, imperfectly illustrated above, are curved both on the flat and on the edge and are in pairs, right and left. Either blade may, however, be used on either tonsil, especially if the operator is ambidextrous, by making the section upward or downward according to the curve. But in most cases it is easiest and safest to make the section upward to avoid cutting the base of the tongue; the flat curve of the blade will prevent the danger to the posterior pillar.

The firm hold by the double hook enables the operator to lift the mass of tonsil tissue out of its bed from between the pillars to any extent, even when it is partly overlapped by projecting pillars.

In an experience of something over four thousand tonsil excisions, I find myself choosing these instruments now in at least 75% of my operations.

REMOVAL OF EXOSTOSIS FROM EXTERNAL  
MEATUS OF LEFT EAR.

Reported for the Ophthalmic Record by  
S. B. MUNCASTER, M.D., WASHINGTON, D. C.

Mr. S., while traveling in Europe in 1891, experienced fullness in ears.

Has been troubled with nasal catarrh for several years. Visiting in St. Louis, he noticed that it was very difficult for him to hear an ordinary conversation. His friend, a physician, examined and found cerumen in both ears. After syringing he could hear well, but had frequent pain in left ear.

The physician spoke of a growth, and advised him to have it removed by a specialist when he returned to Washington. I examined the growth, and found a pedunculated bone tumor, 3 mm. in height, 4 mm. in width, 6 mm. in length, the base 25 mm. The whole about the size of two peas growing from one base, and covered with a thickened membrane.

I cleansed the surface with corr. sub. 1—5000, applied cocaine and tried to cut the base with a thin chisel. The pain was so intense I had an assistant administer ether. In a piece of very small steel wire I made notched teeth, then bending into a snare, and with a snare handle, I looped it around the growth. An assistant holding the wire, I withdrew the handle, twisted small pieces of wood on each end, I cut through the base, and removed the growth with a forcep.

After syringing the ear with a sol. borac. acid I applied iodoform as in any surgical operation.

The pain eased, and in two weeks the swelling was reduced to normal. Now the patient is free from pain, and enjoying good health.

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A CORRECTION.

In the paper of Dr. J. Hamilton Burch, on Rhinitis, which appeared in the April issue of the *Record*, being Vol. i, No. 10, page 349, the last paragraph should read: "The efficacy of treatment depends upon thorough cleansing, and the removal of all crusts from the entire tract, and for this purpose I find, after years of trial, that the remedy most successful in my practice, is a preparation called mentholine, diluted in the proportion of one ounce to one pint of hot water." Again in his formula for the use as a spray, it should be of Fluid Vaseline 3 ij instead of 3 ij.

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REPORT OF A CASE OF BLINDNESS CONCOMITANT  
WITH LA GRIPPE—PERMANENT (?) IMPAIRMENT  
OF THE VISUAL FIELDS.

Written for the Ophthalmic Record by

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On Dec. 25, 1891, I was asked by the family physician, Dr. W. A. Atchison, to visit Mrs. G., age 65, on account of sudden loss of vision which occurred only a few hours previously.

The patient had been suffering for three weeks with a more than ordinary severe attack of La Grippe, which had apparently spent its greatest force on the lungs, no nervous symptoms having manifested themselves until late in the morning before I saw her at 3:30 P. M., at which time she was quite blind. The patient and family stated that she certainly saw the lamp, which was kept burning in the room, some time after mid-night and noticed nothing wrong with her vision. Upon being handed a cup and saucer at about 7 a. m., she discovered that she could not see. When I visited her a 3:30 p. m., I found her in a state

of extreme physical prostration and mental anxiety. The eyes were stretched widely open and presented the appearance of both blind and seeing eyes, i.e. objects could be and frequently were to all appearances fixed, then would ensue a period of muscular anarchy, the eyes staring and wandering aimlessly in all directions. The patient stated that during the preceding night she had pains in the eyes extending back to the temples and involving the supra-orbital region; but no nausea nor vomiting. There was no ciliary injection nor engorgement of the scleral vessels. Pupils dilated *ad maximum* from atropine having been instilled into the eyes in the early forenoon. Tension normal. A careful test by means of a lighted candle, the room having been previously darkened, showed an extremely small area of central vision. The responsive central area of retina was so small that no other than a luminous object could be perceived. All other parts of the visual fields were blank.

When the flame of the candle was brought to the center of the field where it could be perceived, patient complained of rain-bows (not a halo) encircling it. This was doubtless due to the state of the pupils. Still inquiry elicited the statement that she had often seen the rain-bows before.

The ophthalmoscope showed no very marked recent changes. The veins were somewhat engorged; the arteries very slightly diminished (?) in size. No arterial, but slight venous pulsation. Optic discs somewhat hyperæmic (?). There was a rather deepish central oval (vertically) excavation into which the vessels dipped with more than usual abruptness. The only point at which swelling could be distinguished was at the outer margin of the disc of the right eye, where the vessels appeared to be buried in the swollen tissues to one-fourth or one third their diameter. Scattered irregularly over the fundus of each eye were a dozen or more small, irregular, sharply defined white patches (evidently old changes) which looked strikingly like Hirschberg's picture of diabetic retinitis.

No change in the treatment which the patient was receiving for her general condition was advised; but a weak solution of eserine was ordered to be dropped into the eyes. Two days later Dr. G. C. Savage saw the case with me, and we put the



patient upon Fl. Ext. Jaborandi, and minute doses of Hg. bichlor. On Dec. 29, it was thought that there was some improvement in vision, but the patient's intellect had become so clouded that her statements were too incoherent and her answers to interrogatories too vague to make it at all certain. Complete paralysis of tactile sensibility on the left side had developed. Motility but little if at all impaired.

Jan. 5, decided improvement in vision. General condition and paralysis the same. Treatment continued. Improvement in vision went on steadily until Jan. 12, when there was a relapse into complete blindness.

Jan. 13, outer half of field of the right eye and the inner half of the field of the left eye perceives objects in moderate light. Other parts of the fields blank. From this date the general condition of the patient improved. The responsive parts of the retina regained their functions rapidly, until she was able to read coarse print. Discharged Feb. 1, hemiopia remaining.

On April 1, the patient was brought to my office but was too feeble to have the visual fields mapped out with the perimeter.

As well as could be judged by the frequently improvised perimeter—the hands—the hemiopia persisted and was complete. With the refraction corrected  $v = \frac{6}{18} +$ . Refraction and presbyopia both corrected half the words of J. 1. The optic discs appeared normal. No evidence of atrophy.

The blindness in this case was undoubtedly due to an effusion of fluid in the cranial cavity. To what the effusion was due is perhaps not an important question, still it appears to me a pertinent one. There was at no time during the patient's illness pain in the head; nor was there sufficient headache to warrant the suspicion of meningitis, although possibly meningitis can not be excluded. The relapse on Jan. 12, without warning, and partial recovery of vision within twenty-four hours would at least argue against meningeal inflammation as an important factor in causing the relapse. Notwithstanding lepto-meningitis has been found, post mortum, in some cases, I am forced to the conclusion from the behavior of this case, and the reports of similar ones, that the effusion was simply an exosmosis, owing to the extreme relaxation of the tissues, rather than to a meningitis, however low the degree.

The intra-cranial pressure was no doubt greater on the right side than on the left—supposing that hemiopia did not exist previous to the attack of La Grippe. No defect in vision had been observed by the patient, and there was no evidence of atrophy of the optic discs, therefore it is reasonably certain that hemiopia was not present before the illness. Whether it was present from Jan. 5 to 12, at which time the relapse into blindness occurred, is not known. Probably it was; but was overlooked, on account of the extreme feebleness of the patient obliging us to content ourselves with the knowledge that she could see. On Jan. 13, the hemiopia was discovered accidentally by passing the hand in front of one eye while the other was covered. This led to a more careful investigation than had been attempted before, which revealed the presence of hemiopia in either eye. It is quite probable that the preponderance of pressure on the right side, which produced the paralysis of sensation on the left, produced the hemiopia also at the same time, and that the latter was overlooked during the week, from Jan 5 to 12,—of comparatively good vision. If this theory is correct it relieves us of the necessity of supposing that a localized effusion affecting the right optic tract only, brought on the relapse.

When the patient was last seen—April 1—tactile sensibility had been restored. Will the hemiopia persist?

## THE RETROBULBAR NEURITIS OF YOUNG ADULTS.

Written for the Ophthalmic Record by

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Oculist and Aurist to the Alexian Hospital,

Not very much space is devoted to the above subject in most text books and yet there are few diseases of greater interest to the ophthalmologist. That the nervous bundles supplied to the macular region should, in orbital neuritis, suffer to the almost constant exclusion of those given off to the more peripheral parts of the retina is certainly a curious fact.

It might also be added that although, thanks to the labors of Samelsohn, Vossius and others, we know a very great deal about the relations, course, shape, and size (relative and absolute) of the affected fibre-bundles and are thus able to explain the central amblyopia and scotomata, no rational explanation has, so far as I am aware, been given as to why the acute morbid process should almost invariably first show itself in, and be confined to, these particular bundles. No one reading Uhthoff's essay,\* wherein the anatomy--normal and pathological--of the macular bundles is thoroughly discussed, can say that either their position, their size, their nutritive supply, or their minute structure would, from what we know of peripheral neuritis, render them more liable to acute inflammatory attacks than any of the surrounding bundles.

The writer in the *Traité Complet*, or as given by DeWecker and Masselon,† postulates an increasing poverty of lymph and

\*Graefe's Archiv. fur Ophthalmologie Bd. xxxiii 1. p. 59-63.

†Manuel d'Ophthalmologie, p. 684.

blood as we proceed from the periphery toward the centre of the nerve, and in consequence of this the interior nervous bundles are more likely to succumb to morbid influences. If the macular bundles did throughout constitute the central portion of the optic nerve this reasoning might be sound enough, but as a matter of fact they constantly change their position relative to the neural axis in their course from the chiasma to the papilla.

In the chronic form, where a totally different pathological condition obtains, the theory of a less active, or at any rate of a *smaller*, vascular supply to the macular fibres more naturally explains the sclerosis, the interstitial thickening, the connective tissue proliferation or whatever one may term it, for the reason that similar morbid alterations first show themselves in the less vascular parts of organs elsewhere. Be that as it may, it is at least doubtful whether the microscope detects any striking differences between these bundles and their neighbors on all sides.

Aside from this peculiarity acute orbital neuritis differs in another respect from any other peripheral neuritis, in its preference for young adults, mostly females. Traumatism and purulent infection apart, the most common causes are those of the disease elsewhere, viz: exposure to cold and wet, diphtheria, syphilis, rheumatism, the acute exanthemata, menstrual suppression, etc. But even when these are excluded a very respectable percentage of cases must be relegated to that dumping ground of our ignorance—the idiopathic class.

Similarly, the symptoms—pain in the region of the affected nerve, tenderness on pressure or on motion of the parts, functional derangement, sometimes rise of temperature, sometimes not—correspond to the general description of inflamed nerve endings elsewhere. For instance, when the differences in function between the seventh and optic nerves are considered there is a close resemblance in origin, symptoms, course and termination between the more peripheral forms of the so called Bell's paralysis and an ordinary attack of acute orbital optic neuritis.

Most cases of acute retrobulbar neuritis in young people get well. I am inclined to believe that where an attack terminates in general atrophy and partial (or total) blindness, the result is

due to pressure upon the nerve for an unusual time, and is associated with dropsy of the nerve sheath, orbital periostitis or with growths within the orbit. In those instances, on the other hand, (constituting the great majority) that end in perfect or almost perfect recovery, the morbid process has either been confined to the body of the nerve itself, or the accompanying disease in the orbital walls or in the walls of the foramina opening into the orbit has not, to any extent, disturbed the nutrition of the delicate optic bundles. The following case presents some peculiarities, especially the implication of the pupillary and inferior rectus branches of the third nerve, and the suspicion of hysteria.

E. S., school teacher, æt. 23, consulted me May 23rd, of last year. She presents a decidedly anæmic appearance, suffers from constipation and some loss of appetite, has not now and has never had any disease prior to this year but "muscular rheumatism," sleeps very well, always menstruates regularly. Shortly before seeing me she had an attack of *la grippe* (?), i. e., suffered from severe pain in the head, which soon extended to the right eye and affected her vision, which hitherto had been very good; no fever with it.  $R. V. = \frac{20}{200}$ ,  $V. L. = \frac{20}{40}$ . Ordered m.x. of tr. ferri. mur. in a morning saline draught, out door exercise, plenty of good food and, as a concession, to the muscular "rheumatism" aforesaid, medium doses of sodic salicylate. Examined further the bulbs were both found to be tender on pressure, the tenderness extending above the supra-orbital notch on either side, and ocular excursions R. are decidedly painful. Aching pains occasionally in the eye-balls. Scotomata for red and green, and white is seen as grey in the centre of right field. Bjerrum's darkest  $\frac{20}{200}$  type seen by the right eye at 4' only. The left also shows diminished light sense. May 25th,  $R. V. = \frac{20}{100}$ ;  $V. L. = \frac{20}{40}$ . Daily at 5.30 P. M., pilocarpine mur. gr.  $\frac{1}{8}$  with copious drinks of hot lemonade and retirement for the night. This dose was gradually increased until gr.  $\frac{3}{4}$  was reached on May 28. Then  $V. L. = \frac{20}{40}$  and Jüger ij;  $V. R. = \frac{20}{200}$  and Jüger xvj. June 2nd. Stopped sod. salicyl. and began KI. gr.  $7\frac{1}{2}$  t. i. d. increasing it gradually to 20 grs. Some pain in eye-ball, but no tenderness or pain on motion. Ferrated malt, beef steaks, milk, cream and



eggs. V L with  $+ .25 \text{ } \odot + .75 \text{ c. } 75^{\circ} = \frac{20}{30}$ . June 8th, occasional darting pains in both eyes, for which galvanism was used.

In a month returned with V R =  $\frac{20}{200}$  and V L =  $\frac{20}{30}$ , and feeling very well. Suddenly, and without warning, found she could not "turn her right eye." There is marked paresis of R. ext. rectus; the left homonymous image stands a little higher than R. and at 20', with head in primary position, is about 2' from other. Ordered KI. gr. xx, and a saline iron mixt. July 9, some improvement. Has now decided numbness in tips of fingers of both hands (last year had numbness of forehead); but the pharyngeal reflex is well preserved, and cannot discover other indications of hysteria. Ordered candle and red-glass exercise. Some nausea. July 22. Paresis much improved, but symptoms of neuritis are now well shown in left eye (V =  $\frac{20}{200}$ ) with marked improvement in right (V =  $\frac{20}{50}$ ). Blister in both temples, repeated several times. Elix. pepsin, bis. and strychn. after meals. Stopped KI and iron mixture. July 23. Patient now sees only  $\frac{15}{200}$  L, and R  $\frac{20}{50}$  —. Much pain, and cannot distinguish any letters of Bjerrum at any distance with either eye. Next day V L = fingers at 4'. In a week began KI in large doses, with plentiful additions to diet Aug. 1. V R =  $\frac{20}{30}$ ; V L =  $\frac{20}{100}$ . Nausea and vomiting, *not* after food. Some supra-orbital pain. Syrup hypophosphites. August 10, V L =  $\frac{20}{100}$ ; V R =  $\frac{20}{30}$ . Appetite and sleep good, but pains in arms and legs; weight 108 lbs.

On Oct. 20th, patient weighed 123 lbs. V R =  $\frac{20}{20}$  — V L =  $\frac{20}{20}$ . Either eye J. ij slowly, but with  $+ 0.75 \text{ bds.}$ , J. j slowly. No scotomata, and light sense fair. Is looking and feeling well and had so continued several months afterwards when she passed from my observation. There were absolutely no fundus changes throughout.

RIGHT

LEFT

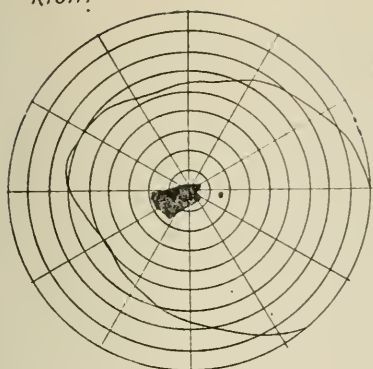


Fig. 1.

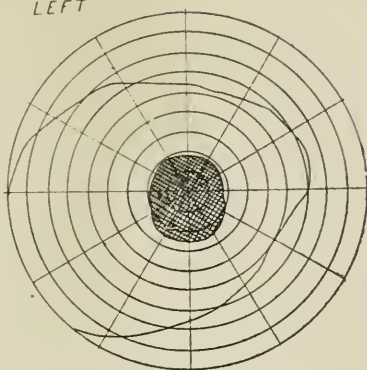


Fig. 2.

The accompanying fields were taken of the R E on May 25th, and of the left July 23rd. The white object, 10 mm. square, was seen as grey in the left field and colors were not correctly perceived in about the same area. The right field showed an absolute scotoma, while the color scotomata for red and green extended about  $10^{\circ}$  farther out.

I am quite sceptical about the effects of treatment upon the very acute "idiopathic" examples of retrobulbar neuritis. I think that most of these cases run their course to recovery unaffected by drugs or the absence of drugs. The simple cases in young adults recover, *nolens volens*; on the other hand patients above 30, or those that exhibit orbital periostitis, rheumatic thickening, neoplasms resisting potassic iodide, or much long continued orbital effusion, only partially recover or become practically blind from secondary atrophy.

A cure by drugs of a simple acute orbital neuritis belongs to the same category as that of the accommodative paresis which so often follows diphtheritic poisoning. In a journal devoted principally to observations made by our brethren of the homœopathic belief, was not long ago published a long and circumstantial account of such a "cure" performed in *six weeks* by the aid of heroic dilutions of *rhus* and other potent remedies! Doubtless his brother of the regular school would, in a similar case, attack the disease with *his* incantations but he would probably not be so certain of their positive efficacy nor have rushed into print about it all.

The acute disease is quite uncommon in young men and I venture to publish a case that was recently referred to me by Dr. Sieber, of this city.

H. W., German, carpenter, æt. 24, always had good eye-sight and good health. Eats and sleeps well. Never had rheumatism, syphilis or any acute disease and is not a drinker or smoker. Just a week ago (March 24th, 1892), noticed before his right eye a cloud which grew larger and larger until he became quite blind on that side. At this time had a "cold in his head," a severe headache on the right side (with supra-orbital pains) and was feverish. The right eye-ball was distinctly tender and hurt considerably when moved in various directions. These symptoms were still present when I saw him. An ophthalmoscopic examination showed the media to be clear, no evidences of embolism and no fundus disturbance except that the veins were hyperæmic and the disk distinctly redder R. than L. The papillary outline was observed on the nasal side R. This condition of things continued for six weeks—as long as I have seen him. Ordered a saline mixture containing 10 grs. of KI three times after meals, to be increased 3 grains daily. V L =  $\frac{20}{20}$ ; V R = shadows; cannot make out more than the situation of the window. In two days V R = fingers at 6" eccentrically. Apr. 8, fingers at 4' and symptoms not so marked. No color field. Apr. 15, V R =  $\frac{5}{200}$ . Colors not yet recognized anywhere but peripheral vision good. Apr. 22, V  $\frac{8}{200}$ . (See perimeter

RIGHT

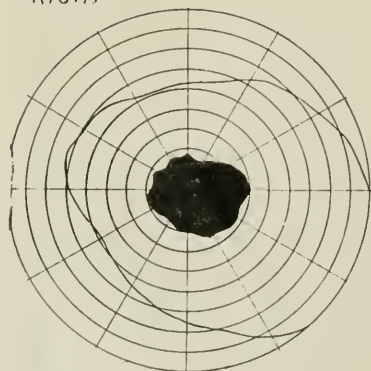


Fig. 3

RIGHT

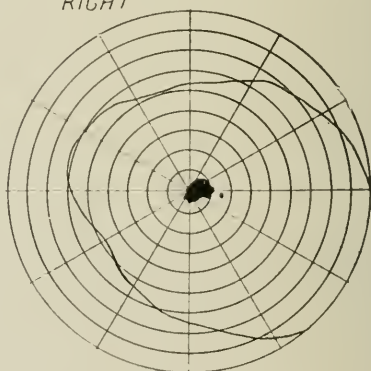


Fig. 4.

chart). Apr. 28, V  $\frac{20}{100}$  and some words of Jäger xii at 25 cm; Electricity. May 3, V  $\frac{20}{70}$ —and J.x. May 6, J.ij and V =  $\frac{20}{40}$  May 10, with sph. + 1. D J.i and V  $\frac{20}{30}$ —. Improving daily.

The perimetric measurements were both taken for white. In the final trial red and green were not correctly made out in an area twice as large as the scotoma for white which was not quite absolute (seen as grey) towards the nasal side.

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## ASTIGMATISM; ITS RELATIVE IMPORTANCE IN ASTHENOPIA DUE TO ERRORS OF REFRACTION.

By D. B. ST. JOHN ROOSA, M.D., LL.D.,

Professor of Diseases of the Eye, New York Post-Graduate Medical School and Hospital; Surgeon to the Manhattan Eye and Ear Hospital.

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[As announced in the last issue of this Journal, the paper by Dr. Roosa, published below, is reproduced from the copyrighted *Medical Record* with the consent of the author of the paper and the publishers of that Journal. It is reproduced in full for two reasons: first, that the readers of the *Ophthalmic Record* who are not subscribers to the *Medical Record* may know what Dr. Roosa's views are; and, second that we may not be accused of unfairness in our attempt to "oppose by reasoning" the views as now entertained by the Doctor. The criticism of Dr. Roosa's paper will appear either in No. 1 or No. 2 of Vol. II of this Journal; and the aim of the criticism will be to prevent error and establish truth in practice.]

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A long and painstaking experience in correcting errors of refraction, for the purpose of relieving asthenopia, will finally show that the difficulties in accomplishing the best results possible are not as great as they seemed to be in the infancy of our knowledge of the subject. I say infancy deliberately, because it was not until 1861 or 1862 that any accurate work of this

kind, based on the investigations of Donders, of 1859, was done in the United States, and then only in the great cities and to a limited extent.

It was not until 1861, or thereabouts, that there was any exact knowledge of general accord in the profession on the matter of the prescription of glasses. This was when astigmatism and hypermetropia began to be understood. As an illustration of what I am saying, I may refer to an article upon astigmatism by the late Freeman J. Bumstead in the *American Medical Times*.<sup>\*</sup> That such an elementary article was needed at that time shows how far we have now come in the progress of knowledge upon this subject, and what an infancy we were then passing through. It is interesting to note that Dr. Bumstead states in his article, which was founded upon a single case of myopic astigmatism, that "cylindrical glasses cannot at present be made in this country, at least in New York."

In these thirty years the profession in the United States has learned that asthenopia, when not dependent upon constitutional conditions, chiefly results from hypermetropia, hypermetropic astigmatism, or mixed astigmatism. Fitting glasses for myopia and presbyopia is comparatively simple work, and the rules for it are not very much in dispute. Those who come to the oculist with these conditions are not usually asthenopic, but simply require glasses, in order that they may see more distinctly, either at a distance or near at hand.

When we come into the field of asthenopia of young people, which is usually based upon hypermetropia or hypermetropic astigmatism, we are on ground which, although often fought over, cannot be said to be in the full possession of any one of the parties that claim the right to it. A more complete understanding and agreement as to the proper mode of procedure in these cases of asthenopia, and chiefly by the use of the ophthalmometer, is being reached. It is easy by its use to exactly measure the corneal astigmatism in every case. We can, therefore, I believe, dispense with any mydriatic for the purpose of suspending the accommodation, except in very rare and entirely exceptional cases. We have only to subtract one-half a diopter, as

<sup>\*</sup>Vol. vii, p. 203, October 31, 1863.



Javal has taught us, from hypermetropic astigmatism, "with the rule," that is, the vertical meridian being the one of greatest refraction, and to correct the full degree of astigmatism of that "against the rule," to be able to know in a large proportion of cases just what glasses are adapted to the patient, independent of his or her answers.

Retinoscopy, now greatly lauded where the use of the ophthalmometer is not thoroughly known, also is far behind the exact, because objective determinations of this instrument. Retinoscopy may be entirely dispensed with in determining astigmatism.

This is a great advance. But I believe, working on the same lines, that we can go a step further in the asthenopia of young persons, and that is, we may disregard the hypermetropia that almost always exists, and prescribe only cylindric without spherical glasses. That is to say, it is sufficient to correct the astigmatism which we find by the ophthalmometer. If the patient is not presbyopic, he will himself comfortably overcome the hypermetropia, until presbyopia has occurred, when it will be no longer possible, and the glasses will be stronger in proportion to the degree of hypermetropia. Hypermetropia may be said to be the refraction of the normal eye, as has been claimed in a recent number of this Journal by Dr. Van Fleet, and has been previously more than intimated by myself and others.

I believe it is high time that the whole subject of normal or usual refraction of the human eye was rewritten. Donder's work was only the beginning—a correct and epoch-making beginning, it is true—but with the imperfections of a beginning in the elucidation of a science which is still very young.

I cannot undertake to say, from my three years' experience in correcting hypermetropic astigmatism by the ophthalmometer, that we can lay down a positive rule as to what degrees of hypermetropia may be disregarded in the case of young subjects, while the astigmatism alone is corrected, but I am inclined to think that as high as two and a half diopters may thus be treated, and possibly, sometimes more. A large number of observations, continued for a long time, may be necessary to show those not now using this instrument the great advantage in the use of the ophthalmometer over the other methods of

determining, and consequently of correcting the refraction, especially in those cases of which I am now writing. Perhaps we may lay it down as a rule that spherical glasses need not be prescribed when the vision is not improved by spherical glasses, or even in facultative hypermetropia, when the vision is the same with or without spherical glasses. This leaves a relatively small number of those who consult us in regard to asthenopia to be fitted with spherical glasses. As is generally known, myopes are not usually asthenopic, although myopia has many dangers, nor are presbyopes. Those who have asthenopia are in large proportion young persons, or relatively so, that is, under thirty-five years of age, and they usually are hypermetropic. In the term asthenopia I include headaches beginning in the eyes or directly referred to their use, and which usually cease when the eyes are not used in fine print, or sewing, or similar occupations. Very few people who have no positive ocular symptoms, but who, because they have neurotic symptoms, think their trouble may have its origin in the eyes, come to me. Those who do so are usually sent by a neurologist. I do not often find that such patients secure much lessening of their general symptoms from the prescription of glasses, although uterine patients do in large proportion. As I have had occasion to say in other papers, if irritation be reflected from an organ there will usually be irritation in the organ itself. Wax in the ear that causes epilepsy will also produce impairment of hearing and tinnitus. A foreign body in the eye that causes sympathetic irritation will also cause serious consequences at its point of entrance or somewhere in the globe; a diseased tooth that causes failure of accommodation or keratitis will have a tender gum.

I do not believe that the eyes are a source of disease when no organic lesion can be discovered in them, or when no congestion exists in them, or no asthenopia results from their use. There has been very little added to what Donders wrote in the treatises and papers that is both true and new, except in the writings that are based upon the conclusions of the ophthalmometer. Many writers have rung changes upon the old tunes, but until we had an objective means of measuring astigmatism even

Donders' errors remained uncorrected, while the subject upon which he appears to have no very positive ideas, that is, the insufficiencies of the muscles, have been greatly expanded in the line of Graefe's investigations, as well as those of Loring and others upon the insufficiencies of the interni, and the old French errors of muscular asthenopia have been revived and expanded, especially in this country.\*

It was formerly the habit of most of the oculists, with whose work I am familiar, to correct a certain proportion of the hypermetropia, and if astigmatism existed, to correct nearly the whole of this. This was my own plan. My conviction is that a correction of the astigmatism will usually be sufficient. If this be so, it will be readily seen that we can get on without the mydriatic, which is an incidental point that I am endeavoring to make. It is not to be denied that the method just mentioned, of correcting both a part of the hypermetropia and all of the astigmatism, produced good results in a majority of cases, but I am inclined to think that the simpler and easier plan of correcting only the astigmatism is even better, and that it succeeds in some cases when the other failed.

Those who are familiar with my views upon asthenopia well know that I do not believe that it is possible to relieve every case of asthenopia, even in young people, or in those who are not presbyopic, by glasses. Nervous exhaustion in one form or another—and it has many—comes in to prevent this, and many are finally relieved not by glasses but by hygiene, and so sometimes by drugs.

\*In a recent paper by Dr. G. A. Berry, of Edinburgh, in the Transactions of the Ophthalmological Society of the United Kingdom, vol. xi, p. 57, occurs a paragraph which is likely to disturb the equanimity of those who speak of us who disbelieve in muscular asthenopia as such a small minority:

"For my part, I regard the practice, which to judge from the literature of the subject is not uncommon in America, of frequently performing tenotomies, or so-called partial tenotomies, for lateral deviations, as a disgrace to modern ophthalmology. As to the frequent ordering of prisms for similar conditions, that is a practice which, while it displays the same ignorance, is open to less serious objections, inasmuch as it only affects the pockets of the patient and that to a less extent than operative interference."

But the correction of errors of refraction must be newly studied in the light of the perfection of the ophthalmometer by Javal and Schiötz, and in that of the rapidly accumulating evidence that the hypermetropic eye is the normal one, and astigmatism also is a widely prevalent condition, which if not of so high a degree as to impair vision, even to a greater degree than was formerly supposed, produces no harm, no asthenopia. It is not too much to say that these advances in our knowledge will produce finally a revolution in the science and art of the correction of errors of refraction. It is amazing that the change is not already more widespread.

In Germany it may have been retarded by prejudice, but that cannot obtain in our country. The following cases illustrate to some extent what has been said in the preceding paragraphs. They are appended to make them more fairly understood, and not with any idea that they embody the whole of the final truth on these subjects.

CASE I. *A Neurotic Person, with Headaches, gets Relief from the Correction of Astigmatism only.*—Mr. W——, aged thirty. This patient was sent to me by Dr. C. L. Dana, who wished his eyes examined, not that Dr. Dana supposed that all his symptoms were caused by his eyes. He said that he had been subject to headaches for the last ten years; there is constant pain in his forehead, vertex, and occiput, and at times a sharp pain starting from the right eye and extending over the right side of the head to the back of the neck. He does not think his eyes cause his headache, but his eyes pain him when he uses them. His general health is good. He is wearing glasses of + 0.50 D. spherical. He has a sister and brother who were relieved of headaches by using glasses for astigmatism. His vision is  $\frac{2}{3}$  in each eye; becomes  $\frac{2}{1\frac{1}{2}}$  by using a glass of + 0.50 D. + 0.50 c. 90°. The ophthalmometer shows him to have only 0.75 D. with the rule, on the right side, and 1.25 on the left. He was ordered a + 0.50 c. 90° for the right eye, and for the left + 0.75 c. 90°. Two weeks afterwards the patient came in to say that he did not have so many headaches, did not frown, glasses seemed to be a rest to him, liked them very much, and four weeks later he said the same. This patient has considerable hypermetropia, besides

the astigmatism. It is my belief that such cases of astigmatism are usually much benefited by cylindrical lenses, although these headaches do not entirely disappear. Less neurotic persons will sometimes tolerate as high a degree of astigmatism without headaches and without asthenopia. This is what I should call a mixed case.

CASE II. *A Clerk, who has always had Headaches at Intervals, finds Ocular Relief from the Correction of Astigmatism.*—Henry J. S—, nineteen years of age. A clerk by occupation. He states that he has been subject to headaches all his life, his eyes pain him on use, blurring at times. His general health is good. His headaches are in his eyes and run up to his head; he sometimes wakes up with them, but he gets worse on use of his eyes. His vision in the right eye is  $\frac{2}{0}$ —becomes  $\frac{2}{0}$  by using  $+ 0.50$  c.  $90^\circ$ , same result on the left side. At some moments he declines all glasses on the left side. This is one of the eyes in which the cornea moves under the instrument, and it is very difficult to measure with the ophthalmometer, but we discovered at least that he had 1 D. with the rule at  $65^\circ$ , that is,  $25^\circ$  off from the vertical in the right eye, and 1 D. with the rule at  $90^\circ$  in the left. He had 1.50 D. of hypermetropia, and was ordered  $+ 0.50$  D.  $\subset + 0.50$  c.  $65^\circ$  in the right, and  $+ 0.50$  c.  $90^\circ$  in the left. Fourteen days after he writes: "I find the glasses you prescribed for me have been a great help; have had no headaches since, and my eyes feel very much rested after a day's work." Nothing has been heard from him since.

CASE III. *Nervous Exhaustion a Cause of Asthenopia; very low Degree of Astigmatism; Relief only by giving up Use of his Eyes.*—The patient was sent to me by Dr. George T. Elliot. He is a student at Yale College, and had worked very hard to get into college. He entered without conditions, but, after getting in, finds he has so much pain in his eyes and head on use, and so much blurring, and so much general debility and indisposition to work, that he wishes to know what can be done for his eyes. He lived a very sedentary life before going into college. His vision is  $\frac{2}{0} +$  in each eye. By the ophthalmometer he has 0.75 D. with the rule in the right eye, and 0.50 D. in the left; considerable hypermetropia, say two diopters. I



expressed the opinion that his was a case in which the asthenopia was only a small part of the general condition, and I prescribed that he leave college and devote himself to an out-of-door life for a year, when I hope he may return without being oppressed by the use of glasses. If he had had a diopter and a half of corneal astigmatism, instead of the low degree which he did have, I would have expected a little more from glasses.

CASE IV. *A Lady in Good Health, nearly Forty, has Asthenopia in the Evening; gets Relief from the Correction of Astigmatism only.*—This lady complains of asthenopia in the evening. She is in fairly good health, not particularly robust. Her vision is  $\frac{2}{3} \frac{0}{0} +$  in each eye. She has 2 D. of astigmatism with the rule. Her general refraction is hypermetropia. She was ordered a  $+ 0.75$  c.  $90^\circ$  in each eye for close work. She came six months later to see me, on account of another patient, and she told me that her asthenopia had been entirely relieved, that her glasses were perfectly comfortable. This is an interesting case, from the fact that the lady is nearly presbyopic, aged thirty-seven, and that she is able, without any correction of the general hypermetropia, to get on in perfect comfort with the correction of astigmatism.

CASE V. *Blepharitis and Asthenopia: Relief from Correction of Astigmatism.*—Mrs. D——, aged thirty-five. This patient suffers from asthenopia, and chronic blepharitis. She was found to have nearly normal vision, and accepted cylindrical glasses. On the right 1 D., on the left .50 D. Her refraction was hypermetropic. The ophthalmometer made the corneal astigmatism 1.50 D. on the right side, and 1 D. on the left. She was advised to wear  $+ 0.75$  c.  $90^\circ$  and  $+ 0.50$  c.  $90^\circ$  on the left for close work, with no correction of the hypermetropia, and two months after she reported that her glasses were perfectly comfortable.

CASE VI. *Headaches and Double Vision: Correction of Astigmatism only; Relief.*—Miss A. D——, aged twenty-eight. This patient has had many headaches, for which she has worn  $+ .50$  D. and  $+ .50$  c.  $90^\circ$ . At times she sees double. Her vision is  $\frac{2}{3} \frac{0}{0} -$ . By the ophthalmometer she has 1 D. of astigmatism in each eye. With  $+ .50$  c.  $90^\circ$ , her vision becomes  $\frac{2}{3} \frac{0}{0} -$ . She

had three diopters of hypermetropia in each eye, but this was totally disregarded;  $+ .50$  c.  $90^\circ$  ordered for each eye, and six weeks after she wrote that her glasses were comfortable, and that the headaches were less frequent. This again was a neurotic case in which the astigmatism became the last pound to break the camel's back.

CASE VII. *Double Vision; Headaches; Relief by Correction of Myopia and Astigmatism.*—Maria C——, aged eleven. This young girl complained of headache and of seeing double. Her vision is only  $\frac{2}{10}$  in each eye. By the ophthalmometer she has 3 D. of astigmatism with the rule. The prominent feature in this case is the marked insufficiency of the interni and the occasional double vision. Her refraction was myopic. She was ordered a — 1 D. in the right eye, added to a — 1.75 c. 180, and in the left a — 5 D., added to a — 1.50 c. 180, with which her vision became  $\frac{3}{10}$  in the right eye, and  $\frac{3}{40}$  in the left. She was seen one year after, when she stated that she was much more comfortable, very much improved, never sees double, but her eyes “get twisted sometimes, but they soon get untwisted.” The concave sphericals were increased, but the cylindricals remained the same. This case illustrates the fact that positive double vision may be entirely relieved by the correction of the astigmatism. I have never asserted that prisms may not in some cases do the same thing, but with a correction of the refraction, muscular insufficiencies are fundamentally cured, not merely assisted by crutches.

CASE VIII. *Double Vision; Migraine; Partial Relief from Correction of Astigmatism.*—This patient has been subject to headaches since she was a girl. The eyes do not pain her, but she has “some doubling of vision” when she has the headache. Sees objects double. There was no double vision when she visited my office. The pain was chiefly over the orbit, and then in the back part of the eye. The diagnosis, by Dr. Graeme Hammond, who sent her to me, was migraine. Patient said this could be easily induced by anything requiring constant use of the eyes. Except being anæmic, patient was well. Her eyes had been put under the influence of atropine before she came to the office. With the ophthalmometer, on the right side, she was

found to have 1 D. of astigmatism with the rule, the axis being from 30 to 35° from 90°. In the left eye she had 1 D. with the rule. She was advised to wear, for close work, on the right side, + 0.50 D.  $\ominus$  + 0.50 D. c. 45°, and on the left, + 0.50 D. c. 90°. Her vision was  $\frac{20}{20}$  in the right eye, and  $\frac{20}{40}$  in the left, with these glasses. These glasses proved to be perfectly comfortable. Six months later, the patient stated that she could read all the evening, but she could not sew, and she had an occasional sick headache, but not so many as formerly. She liked her glasses very much, and was disposed to wear them all the time, to prevent what she calls dizziness and double vision. The patient is still anæmic and neurotic. I think this she will always be, but the glasses are great palliatives.

CASE IX.—The following case illustrates the interesting observation that correction of the astigmatism is sufficient, where there is a very slight degree of astigmatism against the rule, and considerable hypermetropia.

Mrs. A——, aged thirty-six. This lady has had trouble with her eyelids for five or six years. Has blepharitis ciliaris; no asthenopia. What I observed in 1878, in my first paper on the relations of blepharitis ciliaris to errors of refraction, was markedly true here in regard to the absence of asthenopia. Patient's vision was  $\frac{20}{20}$  —. With the ophthalmometer she had 0.25 D. astigmatism against the rule. On some examinations with the ophthalmometer she seemed to have no astigmatism, but we finally concluded that there was separation of the mires, to the extent of 0.25 D in the second position. She was ordered + .50 c. D. 180 in each eye. Three months later, the patient writes that she has had no trouble since using the glasses.

CASE X. *Asthenopia: Relief from Correction of Astigmatism alone.*—Susie L——, aged sixteen. November 14, 1891. The patient's eyes smart, burn, and pain on use; occasional headache. The trouble has existed but a very short time. Is using her eyes eight hours a day, sometimes ten hours. Her vision is  $\frac{20}{20}$  + in each eye. She has 1 D. of astigmatism, and her eyes are hypermetropic. She was ordered a + 0.50 c. D., 90°, and three weeks later she writes me: "My eyes are not at all painful, and are much improved from using the glasses."

CASE XI. *A Case in which Correction of the Hypermetropia and Astigmatism was not as Beneficial as Correction of the Astigmatism only.*—An insurance underwriter, aged twenty-seven, uses his eyes all day; has had trouble with them since he was twelve years of age; watering, tired feeling, etc. Began to wear glasses in 1886. Has had excellent advice, but has always worn spherical as well as cylindrical glasses. He has 0.50 D. of astigmatism against the rule. He has 1 D. of hypermetropia by the ophthalmoscope. Judging from the records of competent men which he brought with him, he had much more under atropine, for he was wearing as much as + 4 D. sphericals added to his cylindrics. He was ordered + 1 D. c., 180° for the right eye, + 0.75 D. c., 180°, for the left eye. On December 22, he writes: "The glasses you prescribed for me have not only relieved me from all the headaches I have had so long, but have been as a new pair of eyes to me.

This case illustrates in a marked way the general theme of my paper, that is, that the astigmatism is the chief factor in producing asthenopia. This patient has had more comfort under correction of the astigmatism alone than when the hypermetropia was also corrected. But as I have already said, we must always regard a considerable degree of hypermetropia as a normal condition: and as I shall show in a subsequent paper, astigmatism even by itself, although more disturbing, as a rule, than hypermetropia, requires, so to speak, a certain setting; in general neurotic conditions, in over-use of the eyes, nervous exhaustion, the coming on of presbyopia, and other concurrent factors, before even it will produce asthenopia. The almost complete uselessness of paralyzing the accommodation, when we can now accurately and quickly determine the corneal astigmatism by the ophthalmometer, is also incidentally shown.—*N. Y. Medical Record.*

## ENTWINED AND CROSSING VESSELS.

Written for the Ophthalmic Record by

B. ALEX RANDALL, M.D.,

PHILADELPHIA, PA.

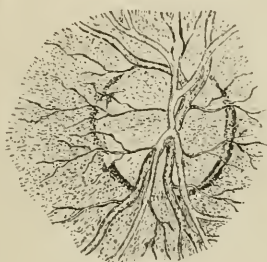
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The report by Dr. Murrell in the April number of the *Ophthalmic Record* of a case in which the twist of a retinal vein around a corresponding artery was regarded as unique, was a surprise to me, since scores of such cases have come under my observation; but I was also surprised in glancing over the published sketches of myself and others to find no striking instance of the anomaly in question, and readily understand that it might seem very rare. It is mentioned in various descriptions of the eye-ground, as in Loring—"Ophthalmoscopy," p 68:—"Sometimes the vessels are entwined about each other like the twisting of vines, especially in the neighborhood of the disk; and when this takes place it is usually, but not always, the artery which maintains its usual course and the vein which encircles it, or one vessel may double upon itself like the twist of a rope." This latter anomaly he illustrates, but not the other. Jæger in his "Beitræge" shows it, but not conspicuously, in Plates XXIX and LXV, which are the same as figs. 69 (and 102) and 119 of his "Hand-Atlas." No other illustrations of it have met my eye in a hurried glance through other books; yet this can hardly be because others have not met it, but rather that it has not seemed rare enough to merit record in the absence of other noteworthy conditions.

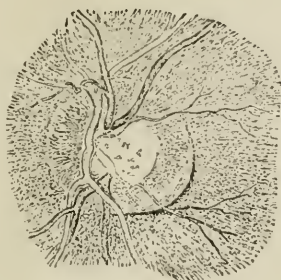
The accompanying illustration (fig. II of plate I) was drawn among my earliest efforts from a patient of Dr. S. D. Risley, and illustrates his paper "Weak Eyes in the Public Schools of



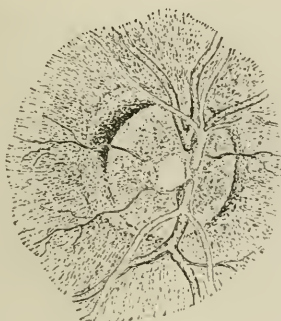
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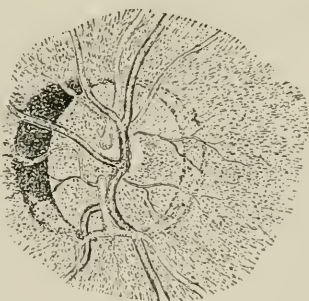
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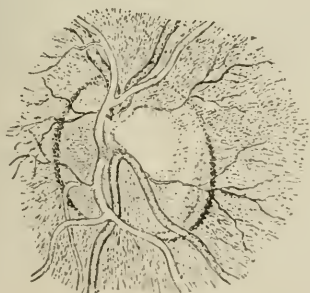
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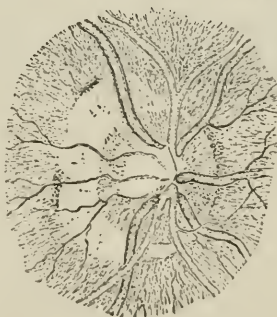
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No. V



No. VI



B. Alex. Randall

Philadelphia," Trans. Penna. State Med. Soc., 1881. "The record states: 'O. S. nerve horizontally ovoid; below and out a scleral ring broadens into a crescent of choroiditis with absorbing pigment. Upper nasal vein winds twice around corresponding artery upon the disk before passing to the retina, etc.'" It is but a slight example of the entwining. Only six unmistakable sketches of the anomaly come to light in a search through my portfolio; in a dozen others its apparent presence may be due solely to the corrections which have been made upon the sketch. One of these (fig. I, pl. II) is rather noteworthy as perhaps the only instance which I have seen in which the artery was the entwining vessel: it is from the right eye of a case of optic atrophy. Another shows a rarer form of the twist, the vein coiling back upon itself to encircle the branch of the artery, which crosses it nearly at a right angle. (Fig. 2, Pl. II.)

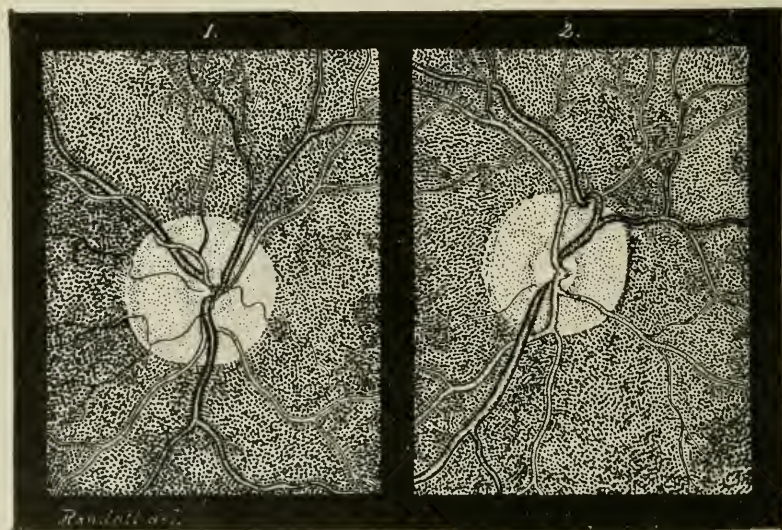


PLATE II.

The sketch of Dr. Murrell depicts another anomaly, which I believe to be of much greater rarity—at least I recall but two cases in which it has attracted my notice, although I have long been on the special lookout for it. The lower macular vein is depicted as a branch of the lower nasal and as crossed by the lower temporal. This crossing of vein by vein (or artery by

artery) has never come to my notice in the sketches of others, so far as I can recall. The only published drawing of it, so far as I know, is the fig. V, of the accompanying plate I, which is also from a patient of Dr. Risley, and represents the left eye of a man of 30 with low hypermetropic astigmatism. The first branch of the lower artery, after passing to the nasal margin of the disk, turns downward to pass beneath the larger lower nasal artery.

Perhaps the experience of Dr. Murrell supplants mine in this regard, as in the other mine is richer than his: and he may be able to fill out what has been merely a fortuitous gap in my series of studies.

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## ABSORPTION OF OPACITIES IN A CASE OF SENILE CATARACT.

Case Reported by

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Ophthalmic Surgeon to Dickinson Hospital,

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C H. age 64, consulted the writer May 13, 1888, for failing eye-sight

The diagnosis was partially developed senile cataract. The nucleus in each lens was slightly amber colored. The striations were well marked for the cortex of each lens, but that of the left was more fully developed. His vision April 25, 1889, was O. D.  $\frac{1}{3}$ ; O. S. fingers at four feet. Presbyopic lenses + 1.5 D.s.

Oct. 28, 1889, vision O. D. =  $\frac{1}{4}$ ; O. S. light perception only.

May 28, 1891, vision O. D. so defective that he could no longer attend to shoemaking, his avocation.

At this time he could not read with his right eye, and the right lens in every respect resembled that of the left eye, except

that there were superficial areas in the cortex, between the striations, still clear, while that of the left was opaque.

Glasses of any power had been of little use for two months, and an operation was therefore proposed for the left eye. It was done with an iridectomy because of the rigid condition of the iris. The lens removed was of large size, and the cortex of firm consistency.

The patient was a frail spare man, afflicted with a troublesome eczema, and subject to strong nervous twitching, if he reclined too long in any one posture.

During one of the nervous spasms, on the fourth night, he rubbed his right eye with his fingers, and probably, as the result of foreign matter on them, instituted a severe conjunctivitis. At the end of a week, it had apparently recovered under antiseptic applications, and again presented a normal appearance.

On being allowed to bear the light, he made the remark: "Doctor, I can see better with the right eye than before I was put to bed."

During fourth week, I tested his eyes with lenses and found vision  $\frac{2}{3}$  O. S. with + 11. D.; O. D. vision  $\frac{2}{3}$  with — 1.5 D. I did not have the opportunity to examine his right lens at this time.

Feb. 10, 1892, I again examined his eyes, with the following result: O. D. vision  $\frac{2}{3}$  with — 4.5 D.  $\odot$  + 1.5 D.c. 180°; O. S. vision  $\frac{2}{3}$  + 11. D.s.  $\odot$  — 0.75 D.c. 165°. The right lens now has a small *greyish steel opacity* in posterior portion, but the rest of the lens is quite transparent.

There are no signs of the cortex striations, nor of the amber colored nucleus, such as had existed on first visit in May, 1888, and at the intervening visits between that and the time of the operation. The changes all took place during the week of apparent conjunctival inflammation. They are corroborated by his own experience, and by the observations of his friends, as well as by my ophthalmoscopic examinations.



## OPHTHALMIC THERAPEUTICS

Translated for the Ophthalmic Record by

F. H. PRITCHARD, M.D.,

NORWALK, OHIO.

NUCLEAR OPIIITHALMOPLÉGIA DURING THE COURSE OF  
TABES DORSALIS.

Dr. Rendu (*Le Bulletin Medical*, No. 22, 1892) regards the majority of these cases as of syphilitic origin; in fact their method of beginning furnishes the proof of that. Fournier has shown that 43% of the cases of tabes which make their appearance in syphilitics begin by attacking the brain, which is to say that the cerebro-bulbar form of tabes is especially frequent in syphilitics without there being any special reason for this localization. In spite of the propable syphilitic origin of these cases specific treatment does not seem to produce any amelioration in such cases. Yet he prescribed an energetic antisyphilitic treatment, frictions with mercurial ointment, the internal administration of the iodide of potash in doses of four to six drachms per diem, revulsives and sulphur baths. In such cases the use of electricity is of greater harm than good.

## TREATMENT OF GRANULAR LIDS.

Prof. H. Truc (*La Semaine*, No. 8, 1892) divides the treatment of granular lids into general, regional and local.

General treatment consists in antidoting the lymphatic tendency of the patient, by means of the iodides, the various preparations of iron, arsenic, cod-liver oil, tonics, hydrotherapy, change of occupation or residence.

Regional treatment is directed to caring for the cleanliness of the linen, hands, nails, hair, nose, ocular secretions etc.

Local treatment is either medical or surgical.

Formerly topical applications were much used; copper, lapis



divinus, acetate of lead, nitrate of silver, inoculation of gonorrhœa, jequirity, while surgical intervention was reserved for the complications of the palpebral conjunctiva. The medical treatment of the granulations should not be entirely abandoned. For they render great services.

*Copper* is useful in the scleroid forms of the disease where the granulations are grouped upon a cicatricial base or on little islets, where they are of a pulpy form and easily destroyed. Used vigorously, *en raclant*, a crystal of the cupric sulphate will express or remove the granular foci and induce a reparative inflammation of the conjunctival mucous membrane, thus obtaining both the mechanical and the special action of the copper. It is of no use when the granulations are fibroid or when the granulations are covered with a thick tegument, where it should be used after scarification or cauterization with chromic acid. It is injurious in the lymphoid forms, where it induces a severe conjunctival congestion, without influencing the subjacent masses. It also causes violent pain and corneal inflammation in such cases.

Lapis divinus has a similar action which is less intense: it presents the same indications and contraindications.

Nitrate of silver is of service in the acute forms, with purulent or muco-purulent discharge. It should be employed in a 20-30% solution, carefully applied to the dry and everted conjunctiva.

Acetate of lead is used by some Belgian clinicians: the writer has found it of little service.

Salves of cocaine, atropine or yellow precipitate are frequently of great service, when the lymphoid form or the form called strumous ophthalmia, is combined with granular lids.

Inoculations of gonorrhœa or the use of jequirity has given him no favorable results.

Surgical treatment comprises application of the cautery, expression, scarification, curettage, raelage, brossage, excision of the superior cul-de-sac and the operations for the palpebral or lachrymal complications.

The cautery is useful in fibroid granulations; in all other conditions it is of positive harm.

Expression is indicated in the scleroid forms where the gran-

ular masses spring from the mucous membrane, or in the lymphoid forms after sacrifice.

Raclage is indicated in the same cases as expression. It may be done with a blunt substance, raclage, with the eurette, curettage, or with a brush, brossage. Preliminary scarification is almost always necessary to lay open the subjacent nests of the granulations. They are made, either more or less deep, oblique or transverse, with or without anaesthesia, as is necessary. A solution of corrosive sublimate, 1 to 1000 or 1 to 500, is used as an irrigant in all these procedures.

Removal of the superior cul-de-sac, praised by Galezowski, is indicated in all cases where the granulations are extensive or confluent in the superior cul-de-sac. It will be found useful in the lymphoid and scleroid forms of the disease. The writer employs it as a complementary measure in scarification, expression, raclage, when the cul-de-sac forms the last refuge of the granulations.

Curettage and brossage, with corrosive sublimate, have been recently praised by Abadie and Darier, at a recent meeting of the French Ophthalmological Society, and in the Academy of Medicine. They have also been employed by Sattler, Manolescu and others. Abadie and Darier have obtained marvelous results and recommend its employment in all cases. The operation now in use has six steps:

1. General anaesthesia;
2. Enlargement of the palpebral fissure;
3. Eversion of the lids;
4. Conjunctival scarification;
5. Grattage with the eurette;
6. Brossage and lavage with an antiseptic solution.

Anaesthesia is necessary to obtain insensibility and passivity of the subject. Enlargement of the palpebral fissure, by incision is necessary to expose fully the conjunctival mucous membrane. The lid is seized with a special forceps and the lid rolled from below, upwards and outwards. Scarification should be deep, parallel to the palpebral border and done with a two-bladed bistoury or a three-bladed scarificator. Grattage or curettage is made across the line of the scarifications. Brossage

is done with a bristle brush, with very hard and stiff bristles, dipped into a solution of sublimate, 1 to 500. Hemostasis is done by means of tampons and the dressing consists of a permanent compress of sublimated cotton.

The writer has somewhat modified this method; he uses cocaine anaesthesia and instead of brossage, expression and raelage. He limits its application to the scleroid and especially the lymphoid forms. Abadie and Darier obtained rapid and complete cures in fifteen days, with an intact conjunctiva. The writer did not have such results. This was due, no doubt to the complications. The ocular complications were pannus, corneal ulcerations, iritis, etc. Pannus, in itself, is a benign affair; it usually yields to local treatment. In order to clear up the cornea rapidly one may do peritomy, syndectomy or excise the superior cul-de-sac. The corneal ulcerations are the result of the lymphatic taint as well as the granulations. Corneal lesions are met with in the lymphatic and scleroid forms, especially; they are always more or less in connection with the general state of the system and the granulations. Atropine, cocaine and hot douches together with conjunctival treatment are sufficient for their cure. Iritis is frequent and requires mydriatics and sometimes paracentesis or iridectomy.

The palpebral complications are: blepharospasm, phimosis, trichiasis and entropion. Blepharospasm is frequent in the lymphoid forms and it is provoked by corneal lesions. It yields to cocaine, atropine, general anaesthesia; in some cases dilatation or canthoplasty will be necessary. Phimosis requires canthoplasty. Entropion, being the consequence of marginal atrophy and tarso-conjunctival retraction, is radically cured by marginoplasty. Lachrymal complications required catheterism, with detersive injections, and if the stenosis is insurmountable, or lachrymation incoercible, ablation of the lachrymal gland.

#### ABUSE OF MERCURY IN THE TREATMENT OF DISEASES OF THE EYE.

Dr. Landolt (*La Semaine Medicale*, No. 61, 1891) read a paper before the French Academy of Sciences in which he admitted the value of mercury in the treatment of eye-diseases

of syphilitic origin, yet he would call attention to the abuse of this drug and proscribe it in diseases of the lachrymal tract, keratitis, scleritis, which is not of specific origin, detachment of the retina, glaucoma, intra-ocular, retinal and choroidal hemorrhages, etc. He related a number of cases bearing on this point.

#### SUBCUTANEOUS INJECTIONS OF CORROSIVE SUBLIMATE IN THE TREATMENT OF GRANULATIONS.

Dr. Dransart (*La Semaine Medicale*, No. 61, 1891) in subjects with granulated lids, injects a syringe-ful of a 1% solution of corrosive sublimate into the mucous membrane of the eye-lid. Either chloroform or cocaine anæsthesia is necessary, as a preliminary procedure. The resulting reaction is intense but the consequent results are very favorable. There follows a great degree of chemosis and swelling of the lids, which, at first sight, appears frightful, but this soon disappears. The writer makes these injections two times a week, one into the upper and the other into lower lid, while at the same time he employs brossage of the conjunctiva. Sometimes one gets cicatrices on the mucous membrane of the conjunctiva, yet if the fluid be diluted this will not occur.

#### PASTA CERATA OPHTHALMICA.

Dr. Max Radzjewski, of Berlin, (*Wiener Med. Presse*, No. 10, 1892) has devised a preparation from the pasta cerata of Dr. Schleich, into which he has incorporated various drugs with happy results. This paste he has employed in 115 cases with good results. It consists of remedies which have a slight caustic action upon ulcers and mucous membranes, exsiccant and limiting the secretions, exercise a stimulating action on ulcers which have flabby granulations, hemostatic, at the same time that it is antiseptic. The salve is also anti-tuberculous, and calming in painful affections. Its composition is:

Red Oxide of Mercury,	1%
Oxide of Zinc, - - -	2%
Camphor, - - - -	$\frac{1}{2}$ %
Aseptic Acid, - - -	$\frac{2}{2}$ %
Cocaine Muriate - - -	2%
Pasta Cerata (Schleich),	q.s.

This paste is recommended in the eye, applied with a glass rod, between the eye-ball and the lid and then rubbed in carefully, in a small piece of the size of the head of a needle: in corneal opacities, following inflammatory affections; in conjunctival catarrh, in the spring of the year; in trachoma; in pustular affection of the margin of the cornea or in the nose of scrofulous children. The eruptions upon other places, as those on the mouth and ears, may also be treated with this salve in such cases. Externally it may be used, rubbed in on the lids in a piece of the size of a pea, after previous removal of the crusts with luke warm water and a soft clean towel. The next morning rub in the salve. The salve is best applied in the evening, on going to bed.

#### ARISTOL IN CORNEAL ULCERS.

Drs. Vignes and Hegg (*Wiener Med. Presse*, No. 10, 1892) have used aristol in many cases of corneal ulcers with excellent results. Traumatic ulcers healed with astonishing rapidity under its influence and there remain only small spots after its use. The remedy acted especially well in the phlyctenular keratitis of scrofulous children. Soon after its use the reaction symptoms decreased in intensity, to rapidly disappear entirely. The drug produces no irritation. The powder is dusted in with a small camel's hair brush upon the surface of the cornea. Atropine may be combined with it in a salve form and a piece of the size of a pea inserted under eye-lid. After a few days, when the danger of an iritis is passed, a salve consisting purely of aristol, may be used. A dressing is then placed over the eye. In deep, extensive infectious ulcers after corneal abscesses or trophic disturbances iodoform or the galvano-cautery is to be preferred.



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VOLUME No. I.

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WITH this number Vol. No. 1 closes. It is with no small degree of pride that the Editor refers the reader to the index of the volume, published in this issue. Many letters have been received in which the writers spoke in complimentary terms of the "*practical nature*" of the *Record*.

The Editor wishes now to most heartily thank in a public manner (he has already thanked privately) those who have kindly, and with profit to others, contributed to its pages. It is to be hoped that all who have contributed to either department of the *Record* will continue to do so, and that many others may take the time to prepare the "cream of their experience" for the use of their confreres and that they may choose to distribute it through the *Record*.

To our subscribers we bow with gratitude, feeling and appreciating as we do the financial aid they gave us in the publication

of the *Record*. We trust that all feel that they have gotten, during the year, valuable returns monthly. May we not confidently expect that all of our present subscribers will continue with us and that, through their influence, many more will be added? A large proportion of our subscribers commenced with No. 1 of the volume now closing. If you are one of that number you will find enclosed a renewal blank which we trust you will fill out and return.

As to the future of the *Record* we make the promise to do our best to give you a live, readable journal, one devoted to the advancement of the science of Ophthalmology, one that will freely applaud truth and fearlessly combat error. No issue will contain less than 32 pages of reading matter. We trust that we may be able to furnish from 40 to 48 pages monthly. This increase will depend more on the quantity of contributions than the amount of cash received. We intend giving you a good journal both as to quantity and quality. The volume now closing contains about 50 more pages than were promised. The subscription price will continue to be \$2.00.

The department of Otology, Laryngology and Rhinology will be continued under the editorial management of Dr. Geo. H. Price, as here-to-fore. A good quantity of valuable matter has appeared in this department of the *Record*, in every number of Volume 1.

To its advertisers the *Record* is indebted for a portion of its income, for which full appreciation is felt. The two sources (subscriptions and advertisements) of income have been sufficient to meet the expense of publication. In the second volume we expect an increase from both sources, every dollar of which will be spent towards improving the journal.

To that portion of the medical press who made a note of the existence of the *Record*, we are indebted for some of our subscriptions. We appreciate the fact that these notices in both home and foreign journals were kind and encouraging. Our list of valuable exchanges is long but we hope it may grow longer.

## SIR WM. BOWMAN.

It may be known to most of the readers of the *Record* that Sir William Bowman is dead. His death occurred on the 29th of March at his country home Joldwynds, near Dorking, Eng. He was born in 1816. He was therefore seventy-six years old at the time of his death—a man full of years and honors. His father was a banker and a botanist, and the fact that he did not accumulate means was an evidence that he paid more attention to the latter than he did to the former. The love of Natural Science was transmitted from the parent to the off-spring, and for William Bowman this was no doubt better than if riches had been his portion. Fortunately his school-life was such as to increase his fondness for scientific research.

He chose the profession of medicine for his life work, and began his studies in the Birmingham General Hospital. In 1837 he went to London where he entered Kings College Hospital, in which he became demonstrator of Anatomy two years later. In his Anatomical investigations he departed from the ordinary course, in that he brought the microscope into service by means of which he could investigate the finest structure of the tissues.

At the age of twenty-two he visited the Hospitals of Holland, Germany, Vienna and Paris. A little later he became Professor of Physiology, and General and Morbid Anatomy. While no longer engaged in active work, Sir William Bowman, up to the time of his death, was still connected with Kings College.

He was an earnest and active member of several scientific societies and was regular in his attendance at their stated meetings, up to within a few weeks before his death. In the field of Anatomy and Physiology he made many valuable discoveries. In 1843, because of failing health, Dalrymple was forced to resign his position as surgeon to the Royal Ophthalmic Hospital, Moorfields. It was at the suggestion of his medical friends that

Bowman was led to think of this position for himself. He at once began preparation and three years later was elected assistant surgeon, and after seven years service he was made full surgeon, which position he held for the following twenty-five years, when, according to the laws of England, having arrived at the age of sixty, he was forced to resign. It was said that those connected with the Hospital were so loath to give him up that they talked of having such an arrangement made as would enable them to have him continue his connection with the Hospital. Thinking, however, that this might be a bad precedent the idea was abandoned and the great man retired.

In 1847, just one year after he became assistant surgeon to the Royal Ophthalmic Hospital, he read before the British Medical Association a paper on "Some Points in the Anatomy of the Eye chiefly in reference to its powers of Adjustment." The muscular fibers he described in his paper as existing in the ciliary body, are the longitudinal fibres which now bear his name. His theory of the accommodation based on this discovery, as is well known, is not the theory which we accept. It is an unsettled question to-day as to what is the true function of these longitudinal fibres of the ciliary body. May it not be that these fibres are concerned in the correction of astigmatism—complete when the degree is small, only partial when the degree is great—and that this attempt at correction is a result of a tilting of the lense by means of contraction of certain of Bowman's muscular fibres?

In 1851 Donders and Græfe visited London and were much with Bowman in his practice and at his home. An intimacy sprung up between these three during that visit which was never broken except by death. From that time on these three great workers in Ophthalmology communicated freely one with the others as to the new truths that were being brought to light by each. They worked together as brothers each encouraging the other, and thus jointly they did much for the science. Bowman was one of the originators of the Ophthalmological Society of Great Britain, in 1880, and for three consecutive years was its president. This society has in his honor founded an annual lecture

known as the Bowman Lecture, which will be one of the means of perpetuating his memory.

To speak of all that he wrote or said about ophthalmology and physiology would occupy more space than is allotted to this notice. By his works he will be remembered as long as ophthalmology exists.

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## NEWS.

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DR. F. C. HOTZ has removed his office from 103 State Street to 467 Dearborn Avenue, Chicago.

DR. CASEY A. WOOD has removed his office from 204 Dearborn Avenue to 103 East Adams Street, Chicago.

DR. CHAS. H. ALTHANS has removed his office from 466 Carlton Avenue to 1024 Bushwick Avenue, Brooklyn.

DR. CREDE, the German Obstetrician and Gynecologist who introduced the preventive treatment of Ophthalmia Neonatorum, is dead.

THE JOURNAL of the A. M. A., has published the program of the Section of Ophthalmology. It is a first class program, and the Oculist who fails to attend the Detroit meeting will miss a good thing.

IF any one not a subscriber to the *Record*, seeing the index of Vol. 1, should desire to procure any one or all of the numbers, he can do so with the exception of No. 1, not a copy of which can be had. No. 1 includes from page 1 to 32, (2) 33 to 72, (3) 73 to 107, (4) 109 to 144, (5) 145 to 180, (6) 181 to 214, (7 and 8 double number) 215 to 290, (9) 291 to 322, (10) 323 to 354, (11) 355 to 386, (12) 387 to 432. Single copy of any one of the issues, except No. 1 and the double No. 7 and 8, can be had for twenty-five cents, a single copy of the double number, fifty cents. Should any one desire his subscription to date back as far as No. 2, Vol. I, he can be accommodated at the regular subscription price, two dollars.



## NEW CHAIRS AND PROFESSORS IN THE JEFFERSON MEDICAL COLLEGE.

The Board of Trustees of the Jefferson Medical College at their meeting, April 7th, 1892, instituted a Chair of Clinical Gynecology, with a seat in the Faculty and elected to the new Chair, Dr. E. E. Montgomery, who has been for a number of years Professor of Gynecology in the Medico-Chirurgical College. They also established the following Clinical Professorships, electing Dr. F. X. Dercum, Professor of Nervous Diseases; Dr. E. E. Graham, Professor of Children's Diseases; Dr. H. Augustus Wilson, Professor of Orthopedic Surgery; Dr. H. W. Stelwagon, Professor of Dermatology, and Dr. W. M. L. Coplin, Adjunct Professor of Hygiene.

## **Department of Otology, Laryngology and Rhinology.**

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GEO. H. PRICE, M. D., EDITOR, 621½ Church Street,  
NASHVILLE, TENN.

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### **TREATMENT OF CHRONIC AURAL CATARRH BY OPERATIONS IN THE NOSE AND THROAT.**

Written for the Ophthalmic Record by

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Assistant Surgeon to the Manhattan Eye and Ear Hospital.

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The common treatment of the aurist is to inflate the tympanum by one of several methods. Some aurists wash out the rhinopharynx with the postnasal syringe or the upward spray, others use a mop or swab to clean out the rhino-pharynx before inflation. The remedies used, both local and general, are commonly known to the profession. The result of their treatment is no improvement. The cases improved under their treatment are cases of acute exacerbation, which would undergo the same improvement without treatment.

The majority of cases of chronic aural catarrh have rhinopharyngitis due to an ichorous secretion flowing from the posterior nares. This secretion is caused by nasal polypi,

polypoid degeneration of middle and inferior turbinated bones, anterior, middle and posterior hypertrophy of middle and inferior turbinated bones, exostosis, ecchondrosis, or deviation of the septum &c. Some cases are due to nasal obstructions without an inflammation of the pharynx, others are due to adenoids and hypertrophic tonsils.

This pharyngitis may be treated by every means possible, and it will continue so long as the secretion runs over the pharynx, and just so long the chronic aural catarrh will continue. When we remove from the nose that which causes the secretion the inflammation in the pharynx begins to decrease. We usually find granulations in the pharynx caused by the irritating secretions, which should be removed by cauterization after all the operations necessary have been performed in the nose. These granulations are frequently very large and sometimes cover the pharynx as far up as the Eustachian tubes, and become very red and irritable on an increase of the secretion from the nose. The hearing improves just as the pharynx improves, which is generally slow. When we have a diminution in the hearing due to nasal obstructions without an inflammation of the pharynx, the improvement is very marked in a few days after the nasal operations. After adenoid and tonsil operations the improvement in hearing is rapid in some cases and slow in others.

We have on our case books several hundred cases treated in this way and only three or four claimed that they could not hear better and they are to return in a few months for further investigation: The following seven cases are illustrations of the conditions above mentioned.

Case 1. Mr. R., began treatment in this office, at the age of 37, on Jan. 14, 1880. He claimed that his ears had troubled him for three years.

Impacted cerumen removed, both ears. Hearing watch each ear 4".

Jan. 31, 1890. Hearing right ear watch 4" left 2". He said he had been a mouth-breather since he was a boy and had always been troubled with mucous in his throat. I found and removed three polypi from his right nostril. The following day I burned their bases with the galvano-cautery. I found an ecchondrosis

of the septum on the left side, but as he got so much satisfaction in breathing through his right nostril and being a very busy man he did not return until Feb. 1891. I then sawed out the ecchondrosis.

April 28, 1891. One polypus returned which was snared out and base burned as before.

April, 1892, I saw him on the street and he said his nose, throat and hearing were perfect.

Case 2. Miss M. age 32. June 30, 1890, has had spells of closing of ears from colds for some time. Had an earache three weeks ago, but it got well and left her ear stopped up. Removal impacted cerumen from both. Drum membrane showed chronic aural catarrh. Hearing distance before the wax was removed each ear, watch contact. After the removal of wax right 6" left 12". Exostosis pressing deeply into the tissue of the right inferior turbinated bone, which I removed with a saw, at the same sitting.

July 5, 1890. H. D. R., watch 60" left 48". Two weeks later heard the same watch with each ear across the room twenty feet. Six months later heard the same watch across the same room twenty feet. She claimed that she had had absolutely no trouble, with her ears, nose or throat, since the bone was removed. This was a case where the rhinopharynx looked all right, and the changes in her ears would be worse or better as the nose would feel more or less stopped up.

Case 3. Nov. 25, 1890. Mr P., age 45, H. D. each 12" watch. Has been troubled with a ringing sensation in his right ear for a month. Commences every evening shortly after dinner and gets worse in the course of the evening. Wakes him up from his sleep. The noise is like a horn going off.

Diagnosis chronic aural catarrh exostosis of septum on left side pressing between middle and inferior turbinated bones. I sawed away a bone about the size of index finger—to first joint, and left a large opening. The next day showed no reaction.

Dec. 19, 1890. Reports that the noises are less, and that for six years there has not been a week that he has not had a depressed feeling and pain about the heart. He had been afraid to exert himself too much as the doctors said he had pleuritic

adhesions. He said that the only time his heart had troubled him was one night when the nostril got closed with a scab, and was immediately relieved when he blew the scab out.

Jan. 4, 1891. Occasional trouble with the noise but has had no return of his heart depression H. D. *aa* watch 36".

Jan. 30, 1891. Very little noise now and can tell that his hearing is much better.

March 7, 1891. The noise is still less, the hearing is improving all the time, and his heart trouble is hardly noticeable. H. D. R. 36" L. 60". He is bothered with scabs in his nose and when he blows them out his nose bleeds.

Dec. 15, 1891. H. D. *aa* 48" with a watch that could not be heard more than half the distance of the one previously tested with. The left ear has been without noises for a long time, and the right has had some since he caught cold. I burned the right inferior turbinated with trichloroacetic acid. Knowing as I do that very busy men never return when they have no more trouble I feel confident that he is entirely cured.

Case 4. Mrs. W., age 68. Dec. 24, 1890, has not heard any thing with her left ear for twenty years. For the last six months her right ear has been getting worse. She went to McCoy & Wildman for a month or more. They did nothing but spray her nose, which did her no good. The drum membranes were sunken and opaque. H. D. R. W. 1", left click of finger nails 1". Could not hear any thing said to her except by bawling in her right ear. Both nostrils were full of polypi.

Dec. 30, 1890. Removed six polypi from each nostril.

Dec. 31, 1890. Removed three polypi from the right and one from the left nostril.

Jan. 13, 1891. Removed one polypi from each nostril, and burned the bases of all with trichloroacetic acid.

Jan. 19, 1891. H. D. R. watch 6".

Feb. 5, 1891. H. D. L. watch 2".

Hears ordinary distinct conversation.

Feb. 20, 1891. H. D. R. watch 12", A. P. 18".

March 12, 1891. H. D. R. watch 12".

Removed three polypi from each nostril, and burned the roots thoroughly.



She stopped coming and I have no further record of her case. Inasmuch as the improvement was so great after the first operation I presume the last operation was followed by like improvement.

Case 5. Mr. J. age 70. May 5, 1891, has been dull of hearing for about three years. Cannot hear anything, the preacher says. Had la Grippe three weeks ago, which made him worse. Drum membranes sunken and opaque. Hearing watch on pressure only over each ear. Have to shout in his ears to make him hear. Removed three polypi from right and two from left nostril.

June 5, 1891. Removed an ecchondroma from left side of septum.

June 16, 1891. Removed one polypus from right and two polypi from left nostril. H. D. watch 1" each ear.

July 14, '91. He says his hearing is gradually getting better and he has no more frontal headaches, or sense pressure between his eyes. He can now hear ordinary conversation, and can hear the preacher very well.

Case 6. Mr. W. age 40. Nov. 3, '91, this case was advised by a niece of Mr. J. to come and see me. He said he had been deaf in his right ear since the age of twenty-two or twenty-three years, and deaf in his left ear for the last five years. That he had gone the rounds among the distinguished ear doctors, and had been getting worse all the time. He said he found out by seeing so many that they all had the same method of treatment. That the only thing they did for him was to inflate his ears with a soft rubber bag and tube, and a hard rubber piece at the end of the tube which was placed in the end of his nose. He said the last one he had examine his ears, was a distinguished New York eye and ear doctor, who said nothing could be done to improve him, and advised him to go to California and live. He said he could not think of giving up his business and leaving New York, and consequently decided to remain here at his business, and never consult any one else about his ears. That when the best talent here had failed to help him, it would simply be a waste of time and money to bother any more about his hearing. He said he was advised to come and see me, and that he had come with very little hope of any improvement. That the only

hope he had was through what he had heard about Mr. J's. improvement by treatment of the nose.

He had been a mouth breather and suffered frequently with sore throat since he was a boy, and thought probably I could help his nose and throat if I did not improve his hearing. Had ear aches when a boy, but never a discharge from his ears. Occasional noise, which increases when he has a cold. H. D. R. watch contact, left, watch  $\frac{1}{2}$ ".

Drum membranes sunken and opaque, hypertrophic tonsils, pharynx covered with large granulations, anterior, middle and posterior hypertrophy of right inferior turbinated, anterior and middle hypertrophy of left inferior turbinated. Burned inferior turbinated right with galvano-cautery.

Nov. 11, '91. Burned inferior turbinated left with galvano-cautery.

Nov. 25, '81. Burned with galvano-cautery middle part of right inferior turbinated.

Dec. 7, '91. Burned with galvano-cautery middle part of left inferior turbinated.

Dec. 21, '91. Burned with galvano-cautery right tonsil.

Jan. 20, '92. Burned with galvano-cautery left tonsil. The granulations were previously burned with galvano-cautery, but were not recorded so can give no date.

Jan. 27, '92. Burned right inferior turbinated above where it was in contact with the middle turbinated.

H. D. watch 7" each ear.

Feb. 3, '92. He complained that something was closing his right nostril still, that he could breathe free and easy through his left, but there had been no improvement in breathing through his right. With the cautery snare I removed a typical posterior hypertrophy from the right side, the largest one I ever saw.

Feb. 5, '92. H. D. watch 18" with each ear a gain of 11", in two days after the posterior hypertrophy was removed. I told him I had done about all that was necessary so far as I could see in the way of operations, but that I would like to keep track of his case, to see how much more he improved, but he has dropped out like some others do.

Case 7. Miss L., age 17, Dec. 18, '91. Was born in Havana and has been here only three years. Has had trouble with her ears in this climate. Had enlarged tonsils and nasal catarrh before she came to New York. Had ear ache in childhood a great deal but none since. Never had any discharge from ears. H. D. R. watch 24'', left 1''. External auditory canals clean, drum membranes dull and retracted. Her family physician said she had heart disease, and advised against giving her ether. She consented to let me remove a few pieces of adenoids at each visit, with the understanding that I would stop when she said enough for once.

Dec. 12, '91. Removed twelve pieces of adenoid, with forceps.

Jan. 5, '92. Removed eight pieces adenoids, with forceps.

Jan. 25, '92. Removed six pieces adenoids, with forceps.

Jan 30, '92. With a weak ticking watch, I stood ten feet from her, and it was heard distinctly with each ear. I considered her hearing perfect and did not try to see if she could hear the watch any further.

In conclusion I will call attention to the fact that the two who only got a partial improvement were 68 and 70 years old respectively, their hearing much worse than either of the other five cases, and probably had had a diminution of hearing for more than half their lives, and did not know it, as they generally hear an ordinary tone of voice, a long time after their hearing has diminished by the watch test, unless the loss of hearing is very rapid, or accompanied by tinitus.

266 Mad Ave.













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The Ophthalmic record

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